RAILROAD GAZETTE

FRIDAY, APRIL 2, 1880.

Contributions.

The Union Electric Signal System.

IV.

BY THOMAS F. KRAJEWSKI, M. E.

(*Continued from page* 164.)

Double Junction.—Fig. 17 represents a junction of two double-track railroads. It is protected by four *home* signals, of which the signal marked 1 is for the "main up" line, 2 for the "branch up," 3 for the "main down" and 4 for the "branch down" line. Signals 1, 3 and 4 have each a *distant* signal; but the signal marked 2 does not require any distant signal, as the one which is connected with signal 1 suffices to indicate the condition of the junction. There is a cross-over track, shown in the illustration, which we shall disregard for the present, and consider the rails to be continuous at that place.

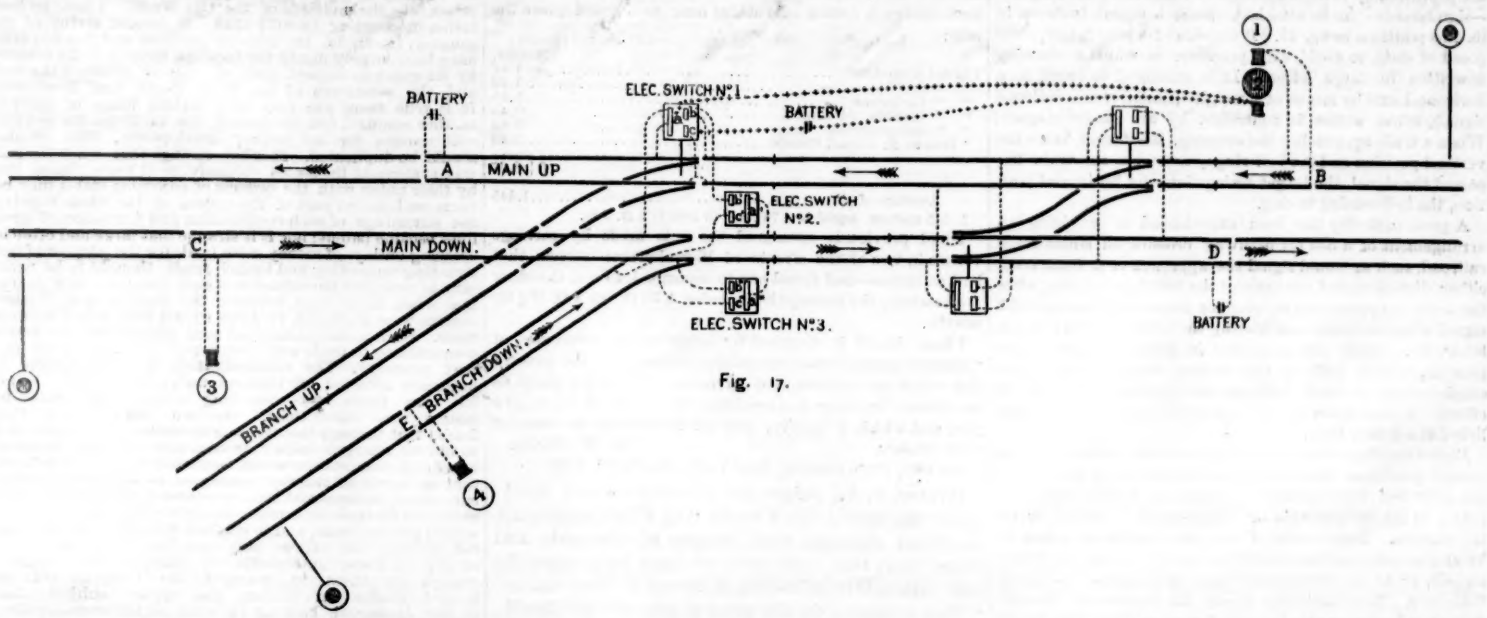

Fig. 17.

A B is an insulated section of the "main up" line, with a battery at *A* and a signal 1, whose electro-magnet is introduced in the rail circuit of that section. If a train enters on the section, the signal 1 goes to danger. An electric switch (marked No. 1) is introduced in this circuit, which is connected with the locking-bar of the switch-rails, so that when the latter are set for the main line and locked, the signal 1 is at safety, for a circuit is closed between plates *a* and *b* of the electric switch, as already described in former examples. If the switch is moved and locked for the "branch up" line, the communication between plates *a* and *b* is broken, and between plates *a* and *c* established. The signal 1 will then go to danger, for its magnet is cut off from the rail circuit. Now, the signal 2 has its magnet introduced into an electric circuit, with its own battery, which is entirely separated from the rails, and which flows through a wire (shown with crosses in the illustration), the ends of which are connected with plates *a* and *c* of the electric switch No. 1. The consequence is that this circuit is closed as soon as the switch has been locked for the "branch up" line, and the signal 2 then moves to safety.

Thus, the position of signals 1 and 2 is reciprocally reversed and dependent on the position of the track switch.

C D is an insulated section of the "main down" line, with a battery at *D* and signal 3, which is acted on by the rail circuit.

The crossing of this section with the "branch up" line is insulated from the continuation of that line, as shown. The rails of the "branch down" line are also insulated from the "main down" line at the junction, but they are connected by wires with plates *c′ c″*, respectively, of two electric switches (marked, respectively, No. 2 and No. 3), the other plates of which are connected as follows, *a′* and *a″*, each with one of the rails of the "main down" line, which communicate directly with the battery; *b′*, with the rail of the "main down" line where the junction commences; but this connection is made through the plates *b* and *a* of the electric switch No. 1 (the purpose of which arrangement will be hereafter explained); and *b″* with the rail of the other side of the "main down" as shown. If the switch, which is placed at this junction, be a *safety* switch, no locking bar is required. Suppose now the switch to be set for the main line, the position of the electric switches will then be such that plates *b″* and *a″* are connected, and plates *b′ a′* also connected. And if the switch on the "main up" line is also in the normal position, electric communication will be established between the battery at *D* and signal 3, the current flowing from the battery through plates *a″* and *b″* of the electric switch No. 3, through the electro-magnet of signal 3 to the other side of the track, and then though plates *a b* of the electric switch No. 1, through plates *b′ a′* of the electric switch No. 2, back to the battery. Signal 3 will then be at safety. But it is evident that if the "main up" line switch is set for the branch, the communication between plates *a b* being broken, the circuit just described becomes open,* and, consequently, signal 3 will be at danger. This arrangement is necessary to prevent a collision on the crossing between a "branch up" and a "main down" train. If the switch of the "main down" were set for the branch, communication between plates *a′* and *b′* and *a″ b″* becomes broken, and, instead of it, the plate *a′* will be connected with *c′*, on the electric switch No. 2, and *a″* will be connected with *c″* on the electric switch No. 3; in other words, the electric current from the battery will be switched off from the rails of the main line at the junction to the rails of the branch line. Signal 3 will then move to danger, while signal 4 will move to safety. The position of these two signals is thus reciprocally reversed and dependent on the position of the track switch. Should it be desirable to introduce an arrangement by which switchmen would be prevented from admitting a train on the "branch up" line, or from admitting a train from the "branch down" on the main line, when a train approaching the junction on the "main down" has already passed signal 3, it can easily be effected by introducing at each switch-stand the locking magnets (already explained on the plan, fig. 16), which would prevent the switches from being moved, as soon as a train has entered the section at *C*. The interlocking with the cross-over track is such that when one of its two switches is set wrong, all signals will be placed at danger. This is accomplished by attaching electric switches to both the track switches of the cross-over track, each of which (electric switches) is introduced in the rail circuits of both lines, as shown by dotted lines. Their action will now be readily understood without any explanation.

The foregoing examples show that a complete automatic interlocking, for all kinds of complicated junctions, can readily be obtained by this system.

Crossings of two railroads, whether of double or single lines, can also be effectually protected by this system, which it is not necessary to describe now.

Draw-Bridge Signals.—What has been said about interlocking of switches with signals, is, of course, equally applicable to draw-bridges. Draws of bridges are always provided with locking-bars, which when connected with circuit-breakers will set the signals to danger or safety, according to whether the draw is unlocked or locked. The signals are placed at any desired distance from the draw. It is always desirable that the bridge-tender should know the position of the signals, and if the latter are placed at a great distance, or obstructions may prevent him from seeing them, a miniature repeating signal (which will be described hereafter), which indicates the position of the out-door signals, is placed in his house. Any change of position of the signal is accompanied by a stroke on a bell to call his attention. But if, notwithstanding all these precautions, there is a possibility that the bridge may be opened after a train has passed the signal which indicates safety, this is effectually prevented by the immediate locking of the locking-bar of the draw as soon as a train has approached the signal, by means of the arrangement which has been described in connection with the switch illustrated in fig. 16. This locking of the draw may be effected by the presence of the train on the line at any desired distance from the bridge, even before the train has approached the signal. It is possible that a train may pass a danger-signal without the engine-runner seeing it, and it would be desirable to have at places of great danger—which always exist at draw-bridges—an acoustic-signal, in addition to the optical-signal. A bell can be attached to the signal-post, which, ringing whenever the signal is at danger, or only when a train passes it, would give a timely warning.

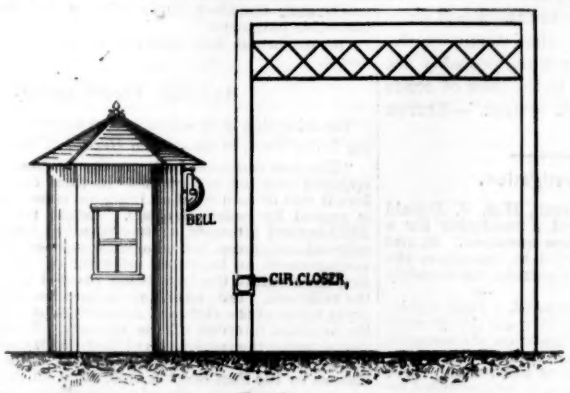

Fig. 18.

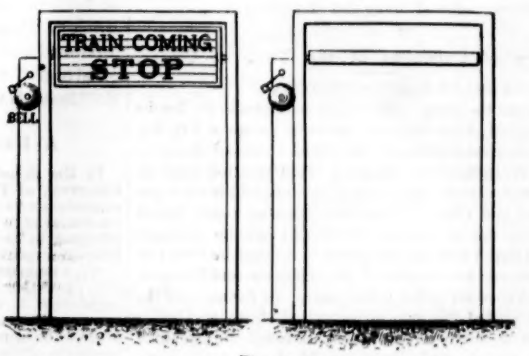

Fig. 19.

UNION ELECTRIC SIGNAL SYSTEM.

* The circuit is in reality only shortened, as was shown in all preceding examples, for the plate c is connected by a wire with the opposite side of the "main down" line, which connection is not shown in the diagram, in order to avoid confusion.

Highway-Crossings.—The system provides for different requirements of different kinds of highway-crossings. Crossings in populous places, such as cities, require the presence of a gateman. A bell which warns the gateman of an approaching train would then be sufficient; but it is desirable, should the gateman, for any cause, not attend to his duty, that the bell should continue to ring, and thus give warning to passengers as long as there is any danger. The Roxbury crossing, on the Boston & Providence Railroad, at Boston, is protected by such an arrangement. This is illustrated in fig. 18. A mechanical bell, operated by a weight, in the same

manner as a road signal, is placed at the gateman's house. The mechanism is controlled by an electro-magnet, which is introduced in the circuit of the track, or in a circuit which is similar to that used for the distant signals. When a train enters the section it breaks the circuit, and causes the bell to ring until the gateman lowers the gate sufficiently to bar the crossing. When the gates are lowered to the required position, they press on a lever, which acts as a circuit-closer of an auxiliary electric circuit, and which is attached to the gate-post, as shown in the cut. As soon as this lever is pressed, the auxiliary circuit is closed, which excites the electro-magnet of the bell instrument, stopping its ringing. Should the gateman try to raise the gates before the train has passed the crossing, or while a second train, following the first, has entered on the section, the bell would immediately begin to ring. This frequently happens at the Roxbury crossing, and it is evident that such electric bells as are manipulated by track instruments would, in this case, fail in their object.

Other highway crossings, where gatemen are not employed, are protected by bells, in addition to which automatic signals —sign boards—can be attached. Such a signal is shown in its two positions in fig. 19. It consists of a long target, composed of slats, to avoid wind pressure, on which a warning is written in large letters. It is arranged to owing in a horizontal axis by means of a weight (similarly to a railroad signal), whose action is controlled by an electro-magnet. When a train approaches the crossing, the target takes the vertical position and the bell rings; and when the train has passed the signal, the target swings into the horizontal position, the bell ceasing to ring.

A great difficulty has been experienced in providing an arrangement of a bell for highway crossing on single-track railroad, such as would signal the approach of a train from either direction, and yet prevent the bell from ringing after the train had passed the crossing, or cause a repetition of the signal when the train was leaving the section. After much labor, Mr. Gassett has succeeded in devising such an apparatus, which, without any serious complication, or the employment of track instruments, produces the desired effect. A description of this ingenious device may be published at a future time.

Repeating-Signals and Hand Instruments.—Signals which protect junctions, draw-bridges, or an entrance to a depot, are provided with miniature repeating signals which are placed in the switchman's or bridge-tender's houses, or on the stations. They consist of small discs which are acted on by electro-magnets introduced into the circuits of the distant signals, or, in the absence of those, into a special circuit of their own. They faithfully repeat the position of the out-door signals, and enable the switchman or the station agent to keep a constant control. In addition to the miniature signal, a bell is made to ring a stroke when a change of the position of the signal takes place. An approach of the train can thus be announced also to passengers waiting at a station.

A repeating signal is, moreover, a timely detective of any derangement of the electric current or breaking of a rail in the track.*

Hand instruments are circuit-breakers of the simplest form, which are introduced into the electric circuits of the signals. By their means, a station agent can, from his office, set the signal to danger and prevent a train from entering the station, if the necessity of doing this should occur.

The Gauge of Carriages of the Time of Cæsar.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In writing on the gauge question, as it relates to the tracks of railways, and defending the standard gauge of 4 ft. 8½ in., in use over most parts of the world, as the most appropriate and common-sense gauge, I often asserted that it, or some gauge closely approximating to it, had been in use for carriages and chariots over two thousand years, that it probably grew out of the size, the weight and the strength of man, and that I believed the proof of it could be found in the pavements of the streets of Herculaneum and Pompeii, that had been covered up for 1,800 years. In January, of the past year, I visited the two cities named above, and had a good chance to verify my assertion. I found the streets of both cities paved with irregular blocks of hard dark-green lava, a very superior material for pavements. The streets are narrow; most of them, like many streets in the old cities of Europe, were not wide enough for carriages to pass each other. At most of the crossings in Pompeii there are in the streets stepping stones to assist foot passengers in crossing from one sidewalk to another, when water was running in the streets. The sidewalks are well elevated above the carriage ways, from ten to fourteen inches; the stepping stones are the same, and many of them are from 12 to 18 in. square. Carriages in passing these stones had to be centred over them, and at such places there are in many cases well defined ruts cut in the lava blocks by the wheels of carriages. You will see these ruts and stepping stones in a photograph of the Strada di Stabbia that I send to you. This photograph shows also on the left side one of the stone water reservoirs that are found throughout the city for watering horses. They were supplied by running water carried to them and throughout the whole city in lead pipes of one and two inches diameter, having in them bronze cocks, with square heads for keys, almost identical with what we use at the present day. I have a piece of one of these pipes, and also of a 4-in. lead pipe used in Rome before the time of Christ. Not finding any of the bronze cocks loose and lying around, as if in search of an owner, I came away without an attempt to induce one to take a trip to Yankee land. The fact was, that I had so many relics of the marble, brick, mortar, etc., of that wonderful city in the capacious pockets of my overcoat, that I could not very well carry away more. I made a point of getting specimens of the building materials of every important building and structure in every city I visited in Europe; and did it without ever resorting to breaking a piece from the main structure, as pieces can always be found around the base of any structure. I was told that I could not get a piece of the "Madelaine," in Paris, but I found around the base of that magnificent temple, but little over a half-century old, pieces as big as my head that had been broken from the architrave. Around the base of the great red granite obelisk, at Heliopolis in Egypt, the largest, highest and oldest of all ever erected in Egypt, I found a great deal more of pieces than I would like to carry away. My pen is wandering; let us return to Pompeii and gauges. Not wishing to have my measurements biased by my leaning to have them coincide with the standard railway gauge, I took a meter rule to measure the distances between ruts, and found them as follows, centre to centre of ruts, as near as I could place the rule:

	Meters.
Via del Abundance	1.47
" " Stabbia	1.43
" " Undecima	1.45
" " Stabbia, 2d time	1.45
" " Herculaneum	1.44
" Domus M. Cæsari Blande	1.43
6	8.67
Average of all	1.445

1.445 meters, equal to 4.74 feet, or nearly 4 ft. 9 in.

I had previously measured the ruts made by carriage wheels in two of the streets of Herculaneum—streets that had no names—and found one to measure 1.44 and the other 1.48 meters, the average being being 4.79 ft., or 4 ft. 9½ in. nearly.

I have heard it disputed by some of the advocates of "narrow-gauge"—the toy-gauge railways of the present day—that the ancients used carriages of so wide a gauge as the above; but there is no resisting the evidence I now give you, and which, I believe, will be interesting to some of your readers.

W. W. EVANS.

No. 66½ PINE STREET, New York, March 27, 1880.

[Weber, in his *Schule des Eisenbahnwesens*, speaking of the earliest Greek roads, "on which moved tall, sacrificial chariots, with images of the gods and altars," says that they seem to have been more like our railroads than like the highways of later nations. "They consisted, for the greatest part of their length, of tracks hewn carefully in stone, in which the wheels of the vehicles moved easily and safely. At certain intervals there were even side-tracks on these roads, whose name *εκτροχη* (turn-out) is the faithful translation of our word switch. The priests, in order to make the transportation of their sacred chariots as extended as possible, *insisted strongly on making the width of the tracks uniform*, and in all the tracks that have been preserved it is seen to be, very constantly, 1.63 meters (5 ft. 4 in.). The tracks of these roads are found scattered all over Greece, and in the oldest parts of Latium; and the wagon tracks that occur in the street of Pompeii, etc., were, therefore, probably not produced accidentally, but belong to the class of roads constructed according to the Greek system."—EDITOR RAILROAD GAZETTE.]

A National Railroad Investigation.

In the Senate, on the 25th of March, Hon. J. Donald Cameron, of Pennsylvania, introduced a resolution for a commission to investigate transportation questions. It, and his remarks in support of it, are reported as follows, in the telegram to the Associated Press. Mr. Cameron was formerly himself a railroad officer.

Mr. Cameron, of Pennsylvania, introduced a joint resolution providing for a commission to consider and report what legislation is needed for the better regulation of commerce among the states; said commission to consist of three Senators to be appointed by the President of the Senate, three members of the House of Representatives to be appointed by the Speaker, and three Commissioners to be appointed by the President, who shall sit during the recess, and inquire generally into the conditions that will most favorably affect commerce among the states by land and water routes, securing thereby to the people the required facilities at the lowest rates, the greatest certainty and economy in time, and that will prevent unjust discrimination, and to report their recommendations to the next Congress. Mr. Cameron said: "Late in the last Congress I introduced a joint resolution of a like character with this, which was referred to the Committee on Commerce, but owing to the want of time no action was taken upon it. The relation of the national government to the interstate and internal commerce of this country is attracting a large share of the public attention. From the peculiarity of our dual form of government, and the division of power between Congress and the states, practical difficulties have arisen and will come to the surface in the control and management of many interests. Interests which, for a time, are local and clearly within the province of state management, in time assume such proportions and affect the general interests of the country so thoroughly that they, in fact, lose the characteristic of local and become of national interest. This is true of our internal commerce, and of its transportation. The fortunate use by the framers of our national constitution of the broad and general language in which they conferred upon Congress power to regulate commerce among the states—a power which, when it is exercised, becomes by that fact exclusive —has brought within its scope not only the instrumentalities of commercial intercourse then known, but all which the necessities and genius of the race should for all time to come invent and develop; and thus the railway and the canal, as highways of interstate intercourse, have come to be as legitimately within the commercial power of the national government as the rivers, the lakes and the seas. Such control, when wisely exerted, has been for the public benefit. It has enabled the influential corporations in such lines to improve the condition and increase the facilities of roads that would otherwise have been unable to make improvements in their physical and financial condition, or furnish such facilities as were needed by the people. It has given homogeneousness to the management, and the result has been less cost for management, greater ability to perform the highest service, and greatly lessened cost of transportation, and, as a consequence, the rates charged the public for the service performed have been very much decreased. It has been largely due to such facilities, thus acquired by such control and influence, that the population of the great West has been so rapidly increased; that territories have been made into states and that the surplus productions of the West have been carried to the great markets at prices which paid the producer, encouraging the building up of the new states in population, and thereby created wealth, and which has added so largely to the development and wealth of the nation. It has been through the railways, and largely through this formation of great lines of railways, extending from the Atlantic sea-ports to the Western cenires of trade, that our country was enabled during the last three years to export its immense surplus productions, and by low prices take the markets of the Old World. I have no hesitation in asserting broadly that the present status of the country, its credit, its financial position and its prosperity have been largely due to the facilities secured to the country by the great combined lines of railway between the East and the producers of the West, South and Southwest. It is true there are now over 80,000 miles of railway in this country, but to furnish the facilities the country will require for its further development, this number should be duplicated. It is not strange that when the railway systems of the states suddenly, as it were, found that by their union with the systems of adjoining states they became an integral part of the system of the whole country, the advantage of such combination and formation of great lines became patent; nor is it strange that large and often increasing outlays of money were made for the purpose of constructing connecting and branch roads, thought to be necessary to complete the influence of such lines; nor is it strange that when these lines between the Eastern and Western centres were perfected, rivalries should have arisen between them. Such a contest between such powers was, of course, demoralizing to trade and destructive of values in all railway property. The demoralization of rates alluded to naturally affected all business unfavorably. The people felt that there was something wrong, and that injustice was done them. On the other hand, they feared that through the agreements between the roads they would be charged unfair prices, and that the healthful benefits of competition would be denied them. It is believed that the power of railway managers to disturb the proper currents of business and the importance of localities by their ability to fix their own rates, should be curtailed or placed within proper limits, and in this belief I fully concur. I do not propose to express any opinion about the justice of any of these statements or charges. But there is enough in them to warrant the Congress of the United States in having the whole subject thoroughly examined, bearing in mind all the considerations I have suggested. The importance of an early investigation into the whole subject is evident. If any legislation be had, it is important that such laws should be put into operation as soon as practicable. If such a commission is unable to devise legislation that would work for good, the country should know it, and then the people and the Legislatures of the states will endeavor to devise means to reach a solution as fair as may be. I cannot say that I have much expectation of any favorable solution, and I say this with some practical knowledge of the difficulties in the way; and, further, I am satisfied no one has yet given sufficient attention to the whole question to enable them to devise a comprehensive answer to the questions involved in the resolution. The commission, therefore, is the first step in any practical result, and, therefore, this resolution is submitted to your favorable judgment."

The resolution was referred to the Committee on Commerce.

Railroad Tree-Planting.

The following is an extract from an article on Tree-Planting in the West, in the Boston *Herald* of March 20:

"The new railroads built in the treeless states in 1879 required over ten million ties* in their construction, therefore it will be seen what an immense consumption of forests is caused by railroads alone. Before the great panic of 1873 several attempts at tree-planting had been made by railroad companies, but none were successful; owing to bad management, an improper selection of trees, neglect and fire, the result of the trees being planted too near the line of the railroads. But, lately, an earnest has been given of the great value of the Harvard Arboretum at West Roxbury to the material interests of the country. Within the last two years, under the inspiration of that institution, more systematic attempts at railroad tree-planting have been made in Kansas by the Fort Scott & Gulf Railroad Company, several hundred acres having already been planted, and, during the present winter, a Boston capitalist has contracted for the planting of 580 acres of prairie land in eastern Kansas. This contract is made with the Messrs. Robert Douglas & Sons, of Waukegan, Ill., the largest and most successful raisers of forest-tree seedlings in the United States, and is peculiar and novel in its provisions. They agree, at a certain price per acre—which would differ, of course, with different condition and location —to break and plow the land, prepare it for planting, plant not less than 2,720 trees to the acre, and cultivate these until they shade the ground and so require no further cultivation to keep down the weeds and strongnatural grasses—the great draw-back to all prairie tree-planting. At the end of this time, probably in ten years from the time of planting, the plantation will be delivered over to the owner, one cent a tree being deducted from the final payment for every tree less than 2,000 to the acre delivered, only trees at least six feet high at the time of delivery being counted. The advantage of this plan, which is the one also adopted by the Fort Scott Railroad, is that the trees will be carefully planted and attended to by experienced men, for whose interest it will be to use the best plants, and to cultivate and care for them in the best manner, so as to be able to deliver the greatest number of trees in the shortest possible time, that they may get quick returns for the money invested in plants, planting, etc. Any plantation in which the trees are six feet high, and in which the ground is so shaded that weeds and stray natural grasses cannot grow, is safe, and will require no further attention until the time comes for thinning out the trees for fence-posts, etc. The plan relieves the owner of the great risk always attending the early years of a plantation, and makes

* It has lately happened on the Old Colony Railroad, near Somerset Junction, that a broken rail was discovered by the switchman from the position of the signal.

* This is an exaggeration. About 2,200 miles of road were built in treeless states, requiring probably not more than 6,400,000 ties.—EDITOR RAILROAD GAZETTE.

his investmeut practically safe. This plantation of 560 acres is to consist of 300 acres of the western catalpa, 200 acres of ailanthus, and 60 acres which will serve as an experimental ground on which will be tested trees of several varieties, to be selected by the director of the Harvard Arboretum, Prof. Sargent. The Western catalpa, a native of the low lands bordering the lower Ohio, and the banks of the Mississippi in Missouri, Kentucky and Tennessee, is a rapidly-growing tree, easily cultivated, and producing timber which, although soft, is almost indestructible when placed in the ground, and, therefore, of the greatest value for fence-posts, railway ties and similar uses. The ailanthus will grow with great rapidity anywhere, where the climate is not too cold for it, and in spite of its wonderfully quick growth, produces hard, heavy timber, valuable for fuel, ties, cabinet work, or almost every purpose for which wood is used.

It is believed that this plantation will soon lead to the formation of others, both by the railroad companies and by individuals, or corporations, chartered to plant and own timber lands in the prarie states. Eventually, a great deal of capital will be invested in this way. The returns will be slow, and a man investing thus should consider that he is doing it for his children. But when the returns do come they will be enormous, even at the present prices of lumber, and it must be remembered that, before a crop of trees planted now can be harvested, the price of ties and other forest products will be more than doubled in the western states. An encouraging fact, and one which shows that public attention is being directed to the importance of providing for the future demand of such things is, that the Iron Mountain Railroad Company, which runs for hundreds of miles through a heavily timbered region, and possesses in its own lands some of the finest white oak on the continent, has also made a contract with the Messrs. Douglas to plant near Charleston, Mo., 100 acres of Western catalpa as an experiment. They do this because catalpa ties have stood on their road entirely unaffected by decay during the last twelve years, and because these trees are so valued by the farmers for fence posts that it is already practically exterminated in Missouri, and so not to be procured for ties, although the superintendent of the railroad is willing to pay three times as much as for the best white-oak ties. If the planting of trees is good policy for a railroad running through a heavily timbered country like Missouri and Arkansas, it will certainly pay for roads in Iowa, Nebraska, Minnesota and Kansas to do the same.

THE SCRAP HEAP.

Railroad Equipment Notes.

The shops of the Fitchburg Railroad, in Fitchburg, Mass., are turning out five new freight cars a week.

At the shops of the Wason Manufacturing Co., at Brightwood, Mass., 20 platform cars were put together in one day. The quickest time on any car was three hours, and the average a little over five hours to each car.

The McDougall Foundry, at Trois Rivieres, P. Q., is turning out 25 car-wheels a day.

Van Liew's patent grain door is now being put in 1,800 cars built for the Wabash, St. Louis & Pacific; 1,600 for the Atchison, Topeka & Santa Fe, and 1,000 for the Chicago & Northwestern, the last-named company having already nearly 6,000 in use. The Pennsylvania Company has been putting this grain door on old and new cars on its leased and controlled lines for three years past, and it is also in use on the Missouri Pacific, the Chicago & Alton, the Grand Trunk, and many other roads.

The Helmbacher Forge & Rolling Mill, in St. Louis, recently forged and finished 150 car-axles in one day. The works are running full double turn and employ 450 men.

Charles W. Pickering & Co., of Philadelphia, are making 1,000 elliptic springs for a Western car-shop. They have recently filled several orders for locomotive springs.

The Cleveland & Pittsburgh shops, in Cleveland, O., are building 250 gondolas to carry 20 tons each. They will turn out about 40 a month, besides doing the usual repair work.

The contract for the cars for the Quebec & Lake St. John road has been awarded to Letarte & Martineau, of St. Roche, Quebec.

The Midland Railway shops at Port Hope, Ont., are building 50 lumber trucks for use on the road.

Iron and Manufacturing Notes.

The Pennsylvania & Virginia Iron & Coal Co. is negotiating for the purchase of the Esteline Furnace property, on the Chesapeake & Ohio road, adjoining the Ferrol Furnace tract.

A notice has been sent out by the Union Rolling Mill Co., Chicago, announcing that it sold out to the Union Iron & Steel Co. on the 11th inst.

The New York & Virginia Coal & Iron Co. has leased Buffalo Gap Furnace, in Augusta County, Va., for three years, with the privilege of purchase. The furnace will soon be put in blast.

The Chapman Valve Co., of Boston, has taken a large contract for valves for an oil-pipe line. The valves are to be very large and heavy, being required to stand a pressure of 2,000 lbs. per square inch.

The Lowmoor Iron Co. has contracted with McMahon & Green, of Staunton, Va., to put up 100 coke ovens at its furnace, on the Chesapeake & Ohio road.

The Otis Iron & Steel Co., of Cleveland, O., has established a branch office in New York, with Mr. J. H. Belcher in charge. It is for the present at Room 44, Astor House.

Hecla, Belfont and Sarah furnaces near Ironton, O., are in blast, and Grant Furnace is nearly ready to start.

The furnace-owners of the Hocking Valley region are considering the question of building a rolling mill at Logan, O., if a suitable site can be procured there.

The Pennsylvania Steel Co., at Baldwin, Pa., has been shipping steel rails to the Pacific Coast for the Northern Pacific road.

The Pottstown (Pa.) Iron Co. has started up its blast furnace, which has been idle four years.

The Legislature of Virginia has passed acts chartering the Iron Co. of Virginia, the Luray Iron Co., the Powhatan Iron Co. and the Shenandoah Valley Mining Co., all to operate in the Valley of Virginia.

Rees & Thorn, of the Duquesne Works, Pittsburgh, are building a steel steamboat 155 ft. long, 32 ft. beam and 4 ft. hold to run on the Magdelena River in Colombia, South America. This is the fourth boat built by this firm for the same company.

Springhill Furnace, in Fayette County, Pa., is to start up as soon as a good stock of charcoal is on hand.

Bridge Notes.

The Keystone Bridge Co., of Pittsburgh, is building a double-track iron bridge of 155 ft. span for the Chicago, Rock Island & Pacific road.

Contracts for 18 iron bridges from 100 to 150 ft. span on the Chicago Rock Island & Pacific road in Iowa, have been let to Rust & Coolidge, of Chicago, the Leighton Bridge & Iron Works, of Rochester, N. Y., and the Central Bridge Co., of New York.

Prices of Rails.

Steel rails are a little easier and quotations are $80 to $82.50 per ton at mill. The mills are full of work, but it is thought that fear of foreign competition will keep prices down.

Iron rails also are a little lower. Quotations vary from $65 per ton at mill, for heavy sections, up to $72 for light rails, and even $75 on small orders.

Old rails are very dull and quotations nominal at $39 to $40 per ton in Philadelphia.

A Tough Case.

On Saturday evening the down freight train for New Haven gave Mr. Lindsley an experience that he will not soon forget Mr. Lindsley came from Canton, Mass. He was walking on the track of the New Haven road about a half-mile this side of North Haven, when the freight train came along that left here at 7 o'clock. As he neglected to get off the track, the engine knocked him off, down an embankment and over a fence. The train was stopped to pick up the body, but it wasn't there. Foot-prints led to a farm house, and there Mr. Lindsley was found. He said he was bruised "some." They put him in a baggage car and carried him to New Haven. He then walked to the New York boat and left the state. His experience of Connecticut was sufficient.—*Hartford Courant, March 25.*

Electric Signal Patents.

The Union Electric Signal Co., of Boston, has purchased for $125,000 all the patents of Frank L. Pope, S. C. Hendrickson, and the New York Electric Railroad Signal Co., and also the patents of John B. Odell, Elery P. Warner and the Electric Improvement Co., of Galesburg, Ill. It is believed by the purchasers that these patents, together with those already owned by the Union Co., give it control of the electric signal business for railroads.

RAILROAD EARNINGS IN FEBRUARY.

Name of Road.	Mileage. 1880.	1879.	Inc.	Dec.	Per c.	Earnings. 1880.	1879.	Increase.	Decrease.	Per c.	Earnings per Mile. 1880.	1879.
Alabama Gt. Southern	290	290				$51,227	$33,024	$18,133		54.8	$177	$114
Atchison, Topeka & Santa Fe	1,152	875	277		31.7	444,000	369,107	74,893		20.3	385	422
Burl'gton, Ced. Rapids & North.	492	434	58		13.4	165,170	97,276	67,894		69.8	339	224
Cairo & St. Louis	146	146				25,303	17,218	8,085		47.0	173	118
Central Pacific	2,335	2,180	155		7.1	1,038,800	1,[illegible]		$18,691	1.8	445	485
Chesapeake & Ohio	435	435				198,683	102,093	96,590		94.6	457	235
Chicago & Alton	840	678	162		23.9	488,543	307,681	180,862		58.8	581	454
Chi., Clinton, Dub. & Minn.	222	222				54,827	28,304	26,524		93.7	247	128
Chicago & Eastern Illinois	159	159				83,265	60,363	22,902		37.9	523	380
Chicago, Milwaukee & St. Paul.	2,182	1,729	453		26.6	739,000	476,666	262,334		55.0	335	276
Chicago & Northwestern	2,289	2,150	139		6.5	1,153,800	889,023	264,177		29.9	504	414
Chicago, St. Paul & Minn.	178	178				71,884	64,572	7,312		11.3	404	363
Chi. & West Michigan	245	245				118,952	89,635	29,317		33.1	486	366
Cleve., Col., Cin. & Ind.	472	472				375,619	296,386	79,233		26.7	796	628
Cleveland, Mt. Vernon & Del.	157	157				34,060	24,195	9,865		40.8	217	154
Detroit, Lansing & No.	201	201				78,176	58,625	19,551		33.4	384	292
Eastern	282	282				175,345	153,371	21,974		14.3	622	540
Flint & Pere Marquette	295	280	15		5.3	118,024	77,520	40,504		52.2	400	276
Hannibal & St. Joseph	292	292				157,566	137,038	20,528		15.0	540	469
Houston & Texas Central	533	501	32		6.4	272,791	241,315	31,476		13.0	512	428
Illinois Central, Illinois lines	873	854	19		2.2	462,073	368,568	94,105		25.5	533	431
" " Iowa lines	402	402				120,138	98,354	21,784		22.1	299	245
Ind., Bloom. & Western	212	212				89,960	82,952	7,008		8.4	424	391
International & Great Northern	526	516	10		1.9	139,331	147,326		7,995	5.4	265	285
Little Rock & Fort Smith	165	165				40,850	23,579	17,271		72.3	248	143
Louisville & Nashville	1,118	977	145		14.9	576,638	439,636	146,002		33.9	516	443
Marietta & Cincinnati	312	312				151,716	125,809	25,907		20.6	486	403
Memphis, Pad. & No.	115	115			28.5	20,749	16,480	4,069		24.7	179	143
Minneapolis & St. Louis	158	123	35		7.9	48,212	28,122	20,090		71.5	305	229
Missouri, Kansas & Texas	848	786	62		4.0	326,306	194,856	131,450		67.4	385	248
Mobile & Ohio	506	527		21		203,300	170,658	32,642		19.1	402	324
Nashville, Chatta. & St. Louis.	349	349				191,154	158,034	33,120		21.0	548	453
N. Y. Central & Hudson River.	1,018	1,018				2,317,231	2,210,304	106,927		4.8	2,276	2,171
N. Y. & New England	275	275				140,933	121,901	19,032		15.6	512	445
Northern Central	326	326				330,859	272,607	57,253		20.9	1,015	839
Northern Pacific	644	644				50,419	44,658	11,761		26.3	88	69
Ogdensburg & Lake Cham.	122	122				22,749	16,842	5,907		35.1	186	138
Paducah & Elizabethtown	185	185			5.2	25,786	21,904	3,882		17.7	139	118
Pennsylvania	1,806	1,716	90		15.8	2,944,596	2,538,030	406,567		16.0	1,634	1,457
Philadelphia & Reading	926	800	126			1,063,309	877,864	185,444		21.1	1,148	1,097
St. L., Alt. & T. H., Main Line.	195	195				102,904	66,728	35,336		53.0	523	342
St.L., Alt. & T. H., Belliev'le L'e	71	71				53,830	44,204	9,626		21.8	758	623
St. Louis, Iron Mt. & Southern.	685	685				492,450	339,161	153,289		45.2	719	495
St. Louis & San Francisco	516	328	188		57.3	199,634	86,026	113,608		132.1	387	262
St. Paul & Duluth	175	169	6		3.5	33,214	22,646	10,568		46.8	190	134
St. Paul & Sioux City	470	329	141		42.9	94,024	66,967	27,048		40.4	200	202
Scioto Valley	100	100				20,351	20,608		257	1.2	204	206
Toledo, Peoria & Warsaw	237	237				105,101	77,624	27,477		35.4	443	328
Union Pacific	1,042	1,042				1,021,997	747,761	274,236		36.7	981	718
Wabash, St. L. & Pacific	1,785	1,218	567		46.6	782,559	595,840	186,719		28.0	427	489
Wisconsin Central	450	450				85,171	54,866	30,305		55.6	189	122
Wisconsin Valley	107	90	17		18.9	22,328	9,924	12,409		125.0	209	110
Total, 52 roads	29,916	27,240	2,697	21		$18,109,648	$14,663,571	$3,473,020	$26,943		$605	$538
Total increase			2,676		9.9			3,446,077		23.5		

RAILROAD EARNINGS, TWO MONTHS ENDING FEBRUARY 29.

Name of Road.	Mileage. 1880.	1879.	Inc.	Dec	P. c.	Earnings. 1880.	1879.	Increase.	Decrease.	P. c.	Earnings Per Mile. 1880.	1879.	Inc.	Dec.	P. c.
Ala. Gt. Southern	290	290				$106,628	$67,035	$39,593		59.0	$368	$231	$137		59.0
Atch., Top. & S. F.	1,152	875	277		31.7	917,500	683,839	233,661		34.2	796	782	14		1.8
Bur., Ced. Rap. & No.	493	434	58		13.4	349,486	214,638	134,848		62.8	710	495	215		43.4
Cairo & St. Louis	146	146				48,124	34,481	13,643		39.5	330	236	94		39.5
Central Pacific	2,335	2,180	155		7.1	2,261,000	2,145,857	115,143		5.4	968	984		16	1.6
Chesapeake & Ohio	435	435				401,018	190,760	210,258		110.6	929	439	490		110.0
Chicago & Alton	840	678	162		23.9	1,012,598	651,418	361,180		55.4	1,205	961	244		25.4
Chi. & Eastern Illinois	159	159				155,731	128,560	27,171		21.1	979	809	170		21.1
Chi., Mil. & St. Paul.	2,182	1,729	453		26.6	1,502,000	1,067,841	434,159		40.7	688	618	70		11.3
Chi. & N. W.	2,289	2,150	139		6.5	2,308,432	1,897,944	410,488		21.6	1,008	883	126		14.3
Chi., St. Paul & Minn.	178	178				158,098	138,442	19,656		14.2	888	778	110		14.2
Chi. & West. Mich.	245	245				175,335	132,380	42,955		32.4	716	540	176		32.4
Cleve., Col. Cin. & Ind.	472	472				768,251	584,328	183,923		31.5	1,628	1,238	390		31.5
Cleve., Mt. V. & Del.	157	157				67,028	52,622	15,306		29.1	435	335	98		29.1
Detroit, Lansing & No.	201	201				159,886	121,204	38,682		31.9	795	603	192		31.9
Eastern	282	282				377,659	316,610	61,049		19.3	1,339	1,123	216		19.3
Flint & Pere Mar.	295	280	15		5.3	228,016	154,932	73,084		47.2	773	553	220		39.8
Grand Trunk	1,273	1,390		117	8.4	1,490,281	1,373,375	116,906		8.5	1,171	988	183		18.5
Great Western	526	526				685,232	658,644	26,588		4.0	1,303	1,252	51		4.0
Hannibal & St. Jo.	292	292				326,946	274,085	52,861		19.3	1,120	939	181		19.3
Houston & Tex Cent.	533	501	32		6.4	591,832	502,061	89,771		17.9	1,110	1,002	108		10.8
Ill. Cen., Ill. lines	873	854	19		2.2	879,909	844,459	35,450		4.2	1,008	989	19		1.9
Ill. Cen., Iowa lines.	402	402				239,559	202,654	36,905		18.2	596	504	92		18.2
Ind., Bloom. & West.	212	212				170,458	165,886	4,572		2.8	804	783	21		2.8
Inter. & Gt. Northern	526	516	10		1.9	297,990	309,144		$11,154	3.6	567	599		32	5.3
Little Rock & Ft. S.	165	165				88,447	48,597	39,850		82.0	536	294	242		82.0
Louisville & Nash.	1,118	973	145		14.9	1,224,309	881,114	343,195		38.9	1,095	906	189		20.9
Mem., Paducah & No.	115	115				39,877	31,834	8,043		25.3	347	277	70		25.3
Minn. & St. Louis	158	123	35		28.5	91,150	55,628	35,522		63.9	577	452	125		27.7
Missouri, Kan. & Tex.	817	786	31		4.0	693,633	389,309	304,324		78.2	849	497	352		71.0
Mobile & Ohio	506	527		21	4.0	453,415	365,144	88,271		24.2	896	693	203		29.3
Nash., Chatta. & St.L.	349	349				396,788	315,313	81,475		26.0	1,134	903	231		26.0
N. Y. C. & Hud. R.	1,018	1,018				4,910,844	4,235,116	675,728		16.0	4,824	4,160	664		16.0
N. Y. & New England.	275	275				310,933	248,971	61,962		25.0	1,131	905	226		25.0
Northern Central	326	326				665,354	538,310	126,744		23.5	2,041	1,652	389		23.5
Northern Pacific	644	644				138,282	81,672	56,590		69.3	215	127	88		69.3
Ogdensb'g & L. Cham	122	122				52,950	34,911	18,039		51.7	434	286	148		51.7
Pad. & E'town	185	185				62,685	47,095	15,590		33.2	339	254	85		33.2
Pennsylvania	1,806	1,716	90		5.2	6,028,128	5,081,464	946,664		18.6	3,338	2,961	377		12.7
Phila. & Reading	926	800	126		15.8	2,379,398	1,835,080	544,318		29.7	2,570	2,294	276		12.0
St. L.,A.&T.H.,M. Li'e	195	195				198,583	120,485	72,098		57.0	1,018	649	369		57.0
St. L.,A.& T.H.,B.Line	71	71				105,100	92,649	12,451		13.4	1,480	1,305	175		13.4
St. L., Iron Mt. & So.	685	685				1,045,065	673,190	371,875		54 3	1,526	983	543		54.3
St. Louis & San Fran.	516	328	188		57.3	395,340	165,448	229,892		139.0	764	504	260		51.9
St. Paul & Duluth	175	169	6		3.5	71,405	46,078	25,327		55.0	408	273	135		50.0
St. Paul & Sioux City.	470	329	141		42.9	195,893	140,521	55,372		39.4	417	427		10	2.3
Scioto Valley	100	100				41,763	41,157	606		1.5	418	412	6		1.5
Toledo, Peoria & W.	237	237				198,407	172,531	25,876		15.0	837	728	109		15.0
Union Pacific	1,042	1,042				1,880,997	1,438,302	442,695		30 8	1,805	1,380	425		30.8
Wab., St. L. & Pacific.	1,785	1,218	567		46.6	1,543,005	1,167,035	375,970		32.2	864	958		94	9.8
Wisconsin Central	450	450				177,827	111,449	66,378		59 5	395	248	147		59.5
Wisconsin Valley	107	90	17		18.9	43,383	19,598	23,815		121.5	405	212	193		91.1
Total, 52 roads	31,150	28,622	2,666	138		$39,112,838	$31,297,470	$7,826,522	$11,154		$1,256	$1,093	$163		14.9
Total increase			2,528		8.8			7,815,368		25.0					

RAILROAD GAZETTE

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EDITORIAL ANNOUNCEMENTS.

Addresses.—*Business letters should be addressed and drafts made payable to* THE RAILROAD GAZETTE. *Communications for the attention of the Editors should be addressed* EDITOR RAILROAD GAZETTE.

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.*

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FEBRUARY EARNINGS.

February earnings are reported in our table for the extraordinarily large number of 52 railroads, which had this year, in the aggregate, 29,916 miles of road, which is about 34½ per cent. of the total in operation in the United States. With nearly 10 per cent. more road this year than last, these roads earned 23½ per cent. more money, and their average earnings per mile of road increased from $538 to $605, or 12½ per cent. Of the 52 roads only *three* report a decrease of total earnings (very small in each case), and only six a decrease in earnings per mile of road, though several have a large mileage of new road in thinly-settled country which has not yet fairly begun to produce for shipment. And many of the increases are very large—two more than 100 per cent. (in the aggregate), fourteen more than 50 per cent., and thirty-one more than 25 per cent.

A large number of roads report that have rarely if ever appeared in this table heretofore, and the roads reporting are pretty well scattered over the country. There are even two New England roads in the list, and the New York Central and the Pennsylvania give something more than a clue to trunk-line earnings. Also several lumber roads report—more than ever before. It may be mentioned that there is scarcely any other business, with the exception of iron, that has been so stimulated by the returning of prosperity as the lumber business, and it was natural to suppose that the lumber roads would show this. What they have experienced may be gathered from the figures below for the earnings of such as report in our table:

	1880.	1879.	Increase.	P.c.
Chic. & West Mich.	$118,952	$89,635	$29,317	33.1
Det., Lansing & North	78,176	58,625	19,551	33.4
Flint & Pere Marquette	118,024	77,520	40,504	52.2
Wis. Central	85,171	54,806	30,365	55.6
Wis. Valley	22,328	9,924	12,409	125.0

Only the last of these has any considerable increase of mileage, and the earnings per mile of this have increased 90 per cent. There are other roads in the list, like the Chicago, St. Paul & Minneapolis, which have an important lumber business, but those given are more particularly lumber roads which receive lumber directly from the mills.

Besides the two trunk lines, several roads report a very large part of whose traffic consists of freight carried at trunk-line rates, and which have suffered very greatly of late years because of the demoralization of such rates. These and their results are:

	1880.	1879.	Increase.	P. c.
Cleve., Col., Cin. & Ind.	$375,619	$296,386	$79,233	26.7
Marietta & Cincinnati	151,716	125,809	25,907	20.6
N. Y. Cen. & Hud. River	2,317,231	2,210,304	106,927	4.8
Northern Central	330,859	272,607	58,252	20.9
Pennsylvania	2,944,596	2,538,039	406,557	16.0
Toledo, Peoria & Warsaw	105,101	77,624	27,477	35.4
The six roads	$6,225,122	$5,520,769	$704,353	12 7

The main line of the St. Louis, Alton & Terre Haute (whose earnings have increased 53 per cent.) has a heavy traffic of this kind, and so have those of the lines of the Wabash, St. Louis & Pacific east of the Mississippi, but the latter has so large a system west of the Mississippi and works so much new road that neither the increase of 28 per cent. in its aggregate earnings nor the decrease of 12½ per cent. in its earnings per mile can be said to have much significance so far as trunk-line traffic is concerned.

Referring to the little table above, we find that the six roads in the aggregate had an increase of 12.7 per cent. in earnings. They had little or no increase in mileage, and the percentage of increase is very nearly the same as that of the average *earnings per mile* of the whole 52 roads. They have not then had extraordinary prosperity—nothing more than the average of other roads. February, however, was a month in which east-bound rates were demoralized last year, averaging probably less than 25 cents per 100 lbs. from Chicago to New York, while this year they were firm at 40 cents. What seems surprising is that the New York Central, which has more of this traffic, probably, than any other road, did not profit more by the improved rates. And we know that the Pennsylvania must have gained very largely by the great activity in the iron business this year, so that only a portion of its improvement can have come from the improvement in east-bound through rates. On the Cleveland, Columbus, Cincinnati & Indianapolis, however, this traffic is probably a larger proportion of its whole business than on any other road. Of its total tonnage-mileage 80 per cent. is competitive, and last year 62½ per cent. of it was through east-bound. It has benefited materially by the better rates, and so must have the Marietta & Cincinnati, whose traffic also is chiefly through. Probably the Northern Central's improvement is not to be attributed to this cause to the same extent.

The extreme of demoralization in east-bound rates was not reached until after February, however. In March, rates ran down from 20 to 15 cents, and probably most of the month the latter rate prevailed. The interesting table given in the Cleveland, Columbus, Cincinnati & Indianapolis report for 1879, showing the average rate per ton per mile on all competitive freight each month, shows the February rate to have been considerably above the average for the year, and the downward course to have been as follows (rates per ton per mile on competitive freight): February, 0.617 cent; March, 0.532; April, 0.463; May, 0.457; June, 0.377. Even this does not show the whole extent of the demoralization in east-bound rates; because west-bound rates were maintained all the time. This year the east-bound rate was an eighth lower in March than in February; but the reduction last year averaged much more than that, probably, and the increase of earnings from through traffic was probably much greater than in February.

It will be noticed that while the Union Pacific shows a large increase in earnings with no change of mileage, the Central Pacific with a considerable increase in mileage worked shows a slight decrease. It must be remembered that the main line of the Central Pacific is now considerably less than one-half of its system, while the Union Pacific is all main line. So far as through traffic is concerned, the two roads must fare almost exactly alike. But the through traffic is not so large a proportion as formerly of the Union Pacific's business, while for some years the Central Pacific has had for its chief business the conduct of the transportation of the state of California, most of the railroads of which it works, and its earnings are rather an index to the prosperity of the state of California than to the activity of transcontinental traffic. Now, California, since the new constitution went into effect, cannot be said to have been prosperous. It does not grow, and business is generally dull, and of course the railroads feel this.

Below we give a table showing the earnings per mile of road of a number of railroads during the month of March for four years past:

	1877.	1878.	1879.	1880.
Atch., Top. & S. F.	$192	$235	$422	$385
Burl., C. R. & North.	185	347	224	336
Cairo & St. Louis	151	89	118	173
Central Pacific	569	474	485	445
Chic. & Alton	479	443	454	582
Chic. & East. Ill.	....	370	380	523
Chic., Mil. & St. Paul	288	471	276	339
Chic. & N. W.	391	522	414	504
Cleve., Mt. V. & Del.	161	173	156	217
Hannibal & St. Jo.	527	425	409	540
Hous. & Tex. Cen.	375	408	428	512
Ill. Cen., in Ill.	508	465	431	533
Ill. Cen. in Ia.	249	327	245	299
Ind., Bloom. & West.	272	272	391	424
Int. & Gt. North	264	217	285	265
Mem., Pad. & North.	...	162	143	179
Mo., Kan. & Tex.	299	230	248	385
Mobile & Ohio	338	358	324	402
Nash., Chat. & St. L.	435	446	453	548
Pad. & Eliz.	143	146	118	139
Pennsylvania	...	1,260	1,457	1,634
Phila. & Read.	925	657	1,097	1,148
St. L., A. & T. H. (Belleville Line)	518	495	623	758
St. L., Iron Mt. & So.	514	498	495	719
Tol., P. & Warsaw	340	400	328	443
Union Pacific	669	817	718	981
Wab., St. L. & Pac.	463	435	489	427

In this table the earnings of 27 roads are given for 1878, 1879 and 1880, and of 24 of them for 1877 also. Twenty-four of the 27 had larger earnings per mile in March this year than last year; 20 of them larger than in 1878; 21 out of 24 have larger earnings this year than in 1877. Thus this year shows very advantageously when compared with any of the other three. Nineteen out of 27 did better this year than in any other for which their earnings are given in the table.

One of the best evidences of the general prosperity of the railroads is the large number of those which report. Nothing makes the railroads so ready to publish their earnings as great prosperity, and a season of misfortune makes them correspondingly reticent. In 1874, the number of roads reporting monthly frequently was as small as fourteen or fifteen; now we find it swelled to 52, with more than four times the mileage reporting six years ago.

For the two months ending with February, we have also reports for 52 railroads, with 31,150 miles of road this year. Their aggregate earnings are 25 per cent. larger than last year, while their mileage is but 8.8 per cent. greater, and their average earnings per mile of road have increased from $1,093 to $1,256, or nearly 15 per cent. *Only one road* of the 52 shows a decrease in total earnings, and but four have smaller earnings per mile.

Planning a Railroad System.

In reviewing the report of the Chicago, Burlington & Quincy Railroad last week we noticed that it had occupied very completely that part of Iowa south of the Rock Island road, especially west of the meridian of Des Moines. When the road was built in Iowa by the Burlington & Missouri River Company, the ground was all open for it to choose. West of the Des Moines Valley road (as it was then called) and south of the Chicago, Rock Island & Pacific there was no railroad in Iowa. The company constructing was thus able to plan its system to suit itself, and in such a way as most firmly to secure the traffic of the district which it intended to occupy, with the least expenditure of capital and for operating the roads when completed—always provided that the managers of the company had any very definite idea of what they could do. Assuming that from the beginning they meant to occupy the whole territory which the road now does occupy, the question would naturally come up, whether this should be done by throwing out branches from the main line or by building lines parallel to it and at such a distance from each other as to accommodate the whole country between them.

The district occupied may be said, roughly, to be a belt across Southern Iowa, from the Mississippi to the Missouri in one direction (about 300 miles), and fifty miles wide, from the Missouri line north. The eastern and especially the southeastern part of this belt is intersected by several roads, and the Burlington sends up one branch about 20 miles further north, to Des Moines; but west of the meridian of Des Moines, it has this territory pretty much to itself and does not get outside of it more than a few miles. Now to occupy the western 140 miles of this belt the Burlington Company has built, besides its main line, 287 miles of branches, in eight different lines, three north and five south of the main line, to say nothing of the 50 miles of the Kansas City, St. Joseph & Council Bluffs road on the western border of this belt, over 30 miles of which the Chicago, Burlington & Quincy runs trains. If the country would permit the construction of east-and-west lines no crookeder than the main line, therefore, instead of a main line with eight branches the company might have had with the same mileage three parallel lines to the Missouri River, which would have left no farm in the 50-mile-wide belt more than eight or ten miles from one of its roads. Now there are considerable districts in this territory twenty miles or more from any of its railroads, in spite of its numerous branches. Indeed, it is easy to demonstrate that the gridiron plan requires the least mileage of road to bring a territory within a given distance of a railroad. The objection to it usually is that it gives transportation in only one direction, and in many old countries this is fatal to it. But so long as the branches of a main line have no connection with other roads, neither do they afford transportation in a direction transverse to the main line, and they prevent the communica-

tion of neighboring towns at the termini of the branches. For instance, the Chicago, Burlington & Quincy has branch stations at Knoxville, Indianola, Fontanelle, Griswold and Council Bluffs, all on an east-and-west line about 20 miles north of the main line, and each on a different branch. To get from one of these places to another, you must go down a branch, along the main line a distance equal to the distance by highway between the two places, and then up a branch. Now, when railroads are built in a new country, they determine to a very great extent the relations of places with each other. Those not connected by rail or connected inconveniently have very little to do with each other, though perhaps not very far apart. And where the course of traffic is overwhelmingly in one direction, as is the case in nearly all Iowa, where nearly all produce moves eastward, and lumber and merchandise westward, there is need of but very few cross lines, as has been shown very clearly by the want of success of north-and-south lines in Iowa, every one of which, we believe, has been bankrupt at least once, and some of them twice. Two parallel lines across Iowa, not to say three, would, we should say, command the traffic of a belt 50 miles wide better than the Burlington main line with all its branches, if such parallel lines could be placed entirely independent of the location of towns and counties, and exactly parallel. But, of course, even in so new a country as Western Iowa, it was necessary to have regard to the position of towns, small and insignificant though they might be. Now in Iowa the position of these towns required that if served by east-and-west lines, one should be built about 20 miles north of the Burlington main line, and rather more than half of the way from that to the Rock Island road. Such a line would very likely be looked upon by the Rock Island Company as an invasion of its territory, the more so as it has itself completed such a line across the eastern half of the state. Another parallel line would be required across the southern tier of counties, in which one has already been built half way across the state.

In behalf of the branch system it may be said that it can be designed and executed piece-meal, as circumstances may require. When it was desirable to reach Nebraska City, a connection could be made by building a branch 40 miles long; but it would have required a parallel line as long as the main line to reach it from the Mississippi and one 150 miles long to reach it from Chariton, on the meridian of Des Moines. Again, a very, very great advantage of the branches has been that they are mostly placed in the valleys of streams, and have been constructed with favorable grades at a very small expense. Their average cost to the company (without rolling stock) appears to have been only $11,160 per mile, and of some of them less than $7,000. Parallel lines would have had to cross the water-sheds, might have cost twice as much as the branches per mile, and then have been much harder to work. Of course such circumstances as these have to be considered in each case separately; but so far as mileage alone is concerned, there can be no doubt that it requires less to occupy a territory with parallel lines, or branches parallel with the main line for a long distance, like the Oscaloosa Branch of the Chicago, Rock Island & Pacific or the Maple River Railroad considered as a branch of the Chicago & Northwestern, or the Chicago & Iowa with the Chicago & Rock River considered as a branch of the Chicago, Burlington & Quincy itself, than by numerous short branches. That is, the gridiron system is better than the herring-bone system. The first ten miles of every branch reaches no country that is more than ten miles from a railroad. It simply gives the country on its line two railroads instead of one. With parallel lines every mile counts. Three parallel lines 200 miles long would bring every mile of a belt 200 miles long and 60 miles wide within 10 miles of a railroad, and would measure 600 miles, One main line with ten branches on each side, each 20 miles, at intervals of 20 miles, would require just as much road, but for the outside zones of 10 miles it would afford only a row of terminal branch stations at intervals of 20 miles, instead of a continuous railroad.

Questions to be Settled at the Mechanical Engineers' Organization.

Under this title the *American Machinist*, dated April 3, has a very savage and personal article, in which some measures, proposed at a meeting of the Committee on Organization of the proposed society, are bitterly denounced. To the purely personal matters in the article referred to it is not necessary to refer, because the readers of the *Railroad Gazette* have little or no interest in so unimportant a subject, but there is a large number of people who are concerned that the new society should be organized on a proper basis. In order that they may have a right understanding of the case, it may be well to say that at the preliminary meeting held on Feb. 16, a code of rules was submitted to those present and was voted on by them, it being understood that their vote was to be only recommendatory in its character; and the rules, after being approved, were referred to a Committee on Organization for revision.

Among the rules approved at the first meeting was the following:

"ART. 4. To be eligible as a *member*, the candidate must have been in the practice of his profession for at least seven years, not merely as a skillful workman, *but as well qualified to design and execute engineering work*, and must have been in responsible charge of work in his branch of engineering."

It is apparent that the rule which determines the qualifications of members must in a great measure determine the future character and status of the Association. It, therefore, seemed to some, if not all, of the members of the Committee on Organization that it was of the utmost importance that the rule for the admission of members should be thoroughly considered, and that all the conditions imposed should be carefully weighed.

There are two different theories on which the society may be organized; the one, that of practically admitting everybody who applies and pays the dues, and who has not a notoriously bad character; the other, that of placing the standard so high that to be a member will imply more than ordinary ability as an engineer, so that a reputation will be attached to admission into the society which will be of value to all those who belong to it.

This question the Committee was compelled to meet. Some of the members of the Committee were satisfied that an association organized on the first theory would contain within itself the seeds of speedy and ignominious dissolution, and therefore the other plan seemed to be the only one worth the time and effort required to put it in working order. This naturally led to an analysis of Article 4, which showed how inadequate it was for the purpose for which it was intended. Thus, what would be regarded as "the practice of his profession"—would cleaning castings, running a lathe, acting as foreman or superintendent be such a practice, or would a candidate be required to have been in "responsible charge of work" for the whole seven years, or for only a week? Then, too, if the words "well qualified to design and execute engineering work" are interpreted literally and strictly, the society will certainly be restricted to a smaller number than that of the "Immortals" in France. It is a universally recognized fact that the majority of engineers who do "design and execute engineering work" are not "well qualified" for doing so. By the terms of Article 4 all such would be excluded, and the council would virtually become judges of the professional ability of all who are proposed for membership. The *American Machinist* would hardly be willing to submit the reputation of its editor to a discriminating council, and have it pronounce a verdict whether he is "well qualified to design and execute engineering work." Very few engineers, whether competent or incompetent, would be disposed to subject themselves to such an inquisition. If any council were to attempt to exercise such functions, the rivalry of business, personal feeling and jealousy would speedily disintegrate it. If Article 4 is adopted as it now stands, the certain result will be that the clause referred to will be disregarded, and then the doors will be wide open for any one with "seven years' practice," and who has been "in responsible charge of work" for a longer or shorter time.

The Committee were thus obliged to inquire what to substitute for Article 4. Some time before the call of the meeting for organizing the new society, one of the members of the Committee had been led to reflect on this subject, and came to the conclusion that it would be impossible to frame any one rule which would admit all who should be admitted and exclude all who should be kept out. Some persons have knowledge of one kind, while the acquisitions of others are quite different, and yet none the less valuable. Some have been educated chiefly on what is called the theoretical side, and their tools have been books and scientific instruments. Others have been trained in the shop, and have been accustomed to handle machinery, as well as ideas. It, therefore, seemed that if any qualifications were required, the only way would be to designate a number, and stipulate that a candidate must have a *certain proportion of them*, and it was with this object in view that the following list of qualifications was framed, which have been the object of the bitter sarcasm of the *American Machinist*:

Proposed Qualifications for Membership in the Society of Mechanical Engineers.

"A candidate to have three of the following five qualifications:

"1. He must have been engaged for three years as the responsible designer of machinery or other engineering structures which have been built from his designs.

"2. Have been in charge for three years of the operation or construction of machinery.

"3. Have served an apprenticeship of three years in some engineering business.

"4. Be a graduate of, or teacher in, some recognized school of engineering.

"5. Be the author of some book on engineering, or the inventor of some 'new and useful art, machine, manufacture or composition of matter,' which is recognized by the council as of sufficient value to give the candidate a claim for membership."

The following was proposed as an alternative for Article 4:

"Have such scientific knowledge as, in the opinion of the council, would be a proper claim for membership."

At the request of a member of the Committee these were presented for its consideration at the late meeting, but with some hesitation and without any confidence that they were the best that could be devised; and it certainly was not the expectation of the author nor the intention of the Committee that they should be made public, and it may be regarded as a grave breach of confidence that the editor of the paper referred to should make such use of information which came to his knowledge by virtue of his position on that Committee, and which he had no authority for publishing, and on which it had taken no action. The obvious result will be that when he is present at future deliberations of the Committee, the other members will be under the constraint caused by the possibility that what they do or say may appear in the newspapers.

The objection to having such use made of the qualifications proposed is, that they were not carefully matured, were not intended to be final, and were meant merely as a suggestion on which future action could be based. Discussion has already shown several points in which they could be amended to advantage, and doubtless further consideration will indicate more.

To the objection that they would exclude "civil, military and mining engineers and architects," it may be answered that a very slight alteration would obviate this objection. This would be done by adding to the second the words "or other engineering structures" and changing the third so that it would read:

"3. Have been engaged for three years under instruction in some engineering business."

The fifth and last qualification, though, is the one which has most excited the wrath of the author of the article in the paper named. With reference to this he says:

"No reader of the *American Machinist* needs to be told that there are engineers, contributors to the technical press, practical men in the shops, and others, who are writing their names in letters of steel upon the mechanical records of the time, the results of whose work will live when some of the book-writers (and compilers) are forgotten."

This being the case, the fifth qualification for membership might be amended as follows:

"5. To be eligible for membership a candidate must be the author of some book *or be a contributor to the American Machinist*," etc.

The attitude which the new society should assume toward "practical" and all other men is, in effect, to say to them, Before you will be admitted you must possess yourselves of such knowledge as will be of advantage to those with whom you are associated, and *be able to communicate it*. The latter for the purposes of the Association is nearly as important as the first.

If the admission of candidates is left to a popular vote of the members, the result will be that nearly all obscure candidates, good or bad, intelligent or ignorant, will be admitted, and only rarely, and then usually from personal pique, will one be defeated.

To give the council discretionary power, without limiting or defining it, is placing a dangerous responsibility in its hands—one which would be certain to bring a storm of indignation on the heads of its members if many candidates were excluded; and if the power is not exercised, the membership will become crowded with wind-bags and blatherskites. The great advantage of rules specifying the qualifications which will be required to admit members is, that it will prevent most of those who are not eligible from applying, thus relieving the Council from the exercise of a disagreeable duty, and when it becomes necessary to shut the door on an applicant, the rules always provide a refuge of defense.

It may be that the proposed rules are deficient in not enumerating some qualifications which would properly give a person a claim for membership. If so, it will be a simple matter to add them, either now or in the future. It should be remembered, though, that it will be much safer to make the rules too strict in the beginning than the reverse. It will be easier in future to throw the doors wider open than it will then be to exclude a flood of incompetence after it has once gained an entrance.

The principle at issue is, whether the new society shall be open to all applicants, whether they have any knowledge or experience worthy of the name or not, or shall it establish a standard of intelligence and experience for those who are admitted. If such a standard is established, what shall it be? If the *American Machinist* can formulate a better one than that which it has attacked, the coming society will owe it a debt of gratitude, and it will have the pleasant consciousness of having been instrumental in securing the future prosperity of the society.

The qualifications for membership in the British Institution of Mechanical Engineers are, or were a year or two ago, as follows:

"Members to be engineers, not under 24 years of age, who, at the date of their election, are managing heads of establishments in which engines or other machines are made; and other engineers who may be considered by the Council to be qualified."

Candidates must be proposed by *three* members, must be approved by the Council, and are then elected by ballot at a general meeting. For the purpose of supplying the Council with the requisite information for the consideration of the proposal, the proposer is requested to give the particulars of the professional career of the candidate. The following blank is given as an example of the information desired:

"Mr. A. B. served his time for — years in the —— works of C. D., at ——, was then engaged as draughtsman in the —— works of E. F., at ——, for — years; superintended the execution of ——, at ——, for — years; was assistant manager in the —— works of G. H., at ——, for — years, and has been —— years partner in ——."

It will be seen that the kind of information required by this Council is almost identical with that specified in the proposed qualifications. In that association, though, the Council is substantially made the judge of a candidate's fitness. In this country the exercise of such responsibility would, it is believed, be attended with great embarrassment, and it would be difficult to get a Council which would exercise such power freely and independently. It would therefore seem to be much safer to establish a code of rules and make that body the judges and interpreters of them. It is true that

after all dependence must, to a greater or less extent, be placed on the judgment of such a body, just as in courts of law it is entrusted to the judges; but the duty of determining whether a person's acquirements conform to an established code involves much less personal responsibility than it does to decide directly on a candidate's eligibility.

It is believed that a code similar to the following would be broad enough to admit all who would make desirable members, and that it would exclude very few, if any, who ought to be admitted:

A candidate to be eligible to membership in the American Society of Mechanical Engineers must be of reputable character, and have *three* of the following *seven* qualifications:

1. He must have been for three years the managing head of an establishment in which machinery or other engineering structures are made, or have been in the practice on his own account of some engineering profession for the same length of time.
2. He must have been engaged for three years as the responsible designer of machinery or other engineering structures which have been built from his designs.
3. He must have been in *responsible* charge for three years of the operation or construction of machinery or other engineering structures.
4. He must be a graduate of, or a teacher in, some recognized school of engineering, or be possessed of such scientific acquirements as, in the opinion of a majority of the Council, are equivalent in value to those possessed by such graduates.
5. Have been engaged for three years under instruction in some engineering business.
6. Be the author of a treatise on some engineering subject, which in the opinion of a majority of the Council is of sufficient value to give the candidate a claim for election.
7. Be the inventor of "some new and useful art, machine or composition of matter" which a majority of the Council regard as of enough importance to be a qualification for membership.

It is true that a code of this kind might, as the *American Machinist* says, cut off the "practical men" who don't know enough. To meet this difficulty we will venture to suggest the organization of another society to be composed of that class. The following might be made the qualifications of membership, a candidate to have *all* of them:

1. He must not be in any business on his own account.
2. He must never have designed any machine which has been built from his designs.
3. He must not be intrusted with the responsible charge of the operation or construction of machinery.
4. He must not have served an apprenticeship.
5. If he has as much scientific knowledge as a graduate of a technical college he will be inelegible.
6. He must never have written a book or made any invention which is worth anything.
7. He must be a contributor to the *American Machinist*.
8. He must be a "practical man *in the shop* who has written his name in letters of steel upon the mechanical records of the time."

The Cleveland, Columbus, Cincinnati & Indianapolis Report.

The Cleveland, Columbus, Cincinnati & Indianapolis Railway is affected more than almost any other road in the country by the trunk-line rates on through freight. There are many roads, it is true, that have a larger through traffic to which these rates apply, but hardly any on which this traffic is so large a proportion of the whole. Its whole line (which may be described as a route from Cleveland to Indianapolis with a branch to Cincinnati) is used for through traffic, and its local traffic is comparatively small—one-fifth of its whole tonnage-mileage in 1878 and 1879. Moreover, as on most of the roads similarly situated, it cannot command high local rates. Consequently, the railroad wars of late years threatened seriously to starve the road to death. It does not take much to support it. In the first place it is a cheap road, costing less than $50,000 per mile. In the next place, and better still, its capital is chiefly in stock, the funded debt being only about $16,200 per mile, and the yearly interest charge about $1,100. Thus it could endure a great deal of starving without coming to the absolute death of bankruptcy, which, however, at one time seemed not far distant. Formerly it paid 7 per cent. dividends regularly on its stock, but the last of them was paid in 1874, and from that time until now the stockholders have lived upon hope. Now a dividend of 2½ per cent. is declared, and there is good reason to believe that this is only the first of a long series, the more so because this can hardly be said to have been produced by improved through rates, but in spite of reduced ones; for the average rate of 1879 was even lower than in 1878, and the effect of the maintenance of east-bound rates will tell first on the business of 1880.

All the time the traffic of this road has grown satisfactorily. The passenger and ton-miles for eight years have been:

	Passenger-miles.	Ton-miles.	Av. rates. Pass. mile.	Av. rates. Ton. mile
1872	27,518,395	256,313,274	2.946	1.342
1873	27,623,254	274,310,194	3.009	1.382
1874	28,951,002	264,163,951	2.716	1.192
1875	30,497,320	263,311,981	2.541	1.005
1876	36,042,780	311,785,948	2.222	0.814
1877	29,066,177	275,686,300	2.343	0.890
1878	29,470,300	345,845,373	2.289	0.782
1879	34,071,632	401,107,970	2.172	0.697

The largest freight earnings were in 1873, when the average rate was highest. In 1877 the traffic (tonnage mileage) was substantially the same, but the average rate had fallen off more than one-third, and the freight earnings were reduced nearly $1,300,000, which is equivalent to 8½ per cent. on the stock. In 1879, with 46 per cent. more traffic, the earnings were a quarter—nearly a million dollars—less.

The encouraging feature of 1879 was the great growth in traffic, and especially in passenger traffic; the latter was 15½ per cent., the freight traffic 16 per cent., greater than in 1878, and in spite of the lower average rates, there was a considerable increase of revenue from both these sources, amounting to 9.7 per cent. in passenger and 7.5 per cent. in freight earnings. Expenses were substantially unchanged, so that these gains were additions to profit as well as to earnings.

The maintenance of rates so far this year must have been of very great advantage to this company. In January and February its earnings were 31½ per cent. larger than last year, and March is likely to show a still greater gain. The capital being small, only moderate earnings are required to yield fair dividends on the stock. Much, of course, will depend upon the rates after navigation opens. These may be much lower than now, possibly, but it is altogether unlikely that they will be so low as they were last year. Probably the railroads would rather go without the traffic, than to take it at those rates.

Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

Morgan's Louisiana & Texas.—Extended from New Iberia, La., north by west to Vermillionville, 18 miles, completing the road.

Connotton Valley.—Extended from Oneida, O., northwest to Canton, 17 miles. Gauge, 3 feet.

Milwaukee, Lake Shore & Western.—Extended from Carbonate, Wis, northward to Norrie, 7 miles.

This is a total of 42 miles of new railroad, making 795 miles thus far this year, against 298 miles reported for the corresponding period in 1879, 226 in 1878, and 165 in 1877.

THE SIOUX CITY & DAKOTA RAILROAD goes into the possession of Chicago, Milwaukee & St. Paul, but only under a short lease (five years). This was quite unexpected; the road has always had its eastern outlet by way of Sioux City, whence the Illinois Central and the Sioux City & Pacific in connection with the Chicago & Northwestern afforded direct outlets to Chicago and the East, and competed with each other for its traffic. Mr. John I. Blair, who is supposed to be the chief stockholder in the Sioux City & Dakota, is also largely interested in all those roads east of Sioux City, so that it would appear to be to his interest to have the last-named company continue to find its outlet at Sioux City, as heretofore. The new lessee will naturally desire to change the course of transportation on the road as far as possible by making the chief outlet of its traffic and centre of operations at the junction with its own line near Beloit, Iowa, more than 60 miles north of Sioux City and about 100 miles from Yankton. The latter place the Chicago, Milwaukee & St. Paul has prepared to reach by a branch of its present Dakota line, which now passes north of Yankton and strikes the Missouri some distance west of it. This branch is ready for the rails for some distance from the junction; if completed, it will make a shorter line to Yankton than that by way of the Sioux City & Dakota, by which in order to reach the Sioux River crossing of the St. Paul road, due northeast from Yankton, the route is southeastward about 50 miles and then north an equal distance. Indeed, the Yankton-Sioux City line (formerly the Dakota Southern) of the Sioux City & Dakota comes much more naturally into the systems of the Illinois Central or the Chicago & Northwestern than into that of the St. Paul. But by controlling it the latter gets command, for the present, of the whole Missouri valley north and west of Sioux City, with the exception of a few miles on the Nebraska side over which the Covington & Black Hills (now owned by the St. Paul & Sioux City organization) narrow-gauge road has been built. It is, however, hardly probable that the two great Chicago corporations will consent to remain fenced out of this part of the Missouri valley, and cut off from all connections beyond their present western termini. If they cannot have their old connection and facilities over the Sioux City & Dakota, in course of time they will probably build a road, or roads, of their own. There may be room enough for another road on the Nebraska side of the Missouri, but north of it, in this part of Dakota, another would be superfluous, so far as serving the needs of the country is concerned. As the St. Paul can get a better line to Yankton by completing the branch that it has already begun, it may be good policy for it, as soon as it becomes evident that the roads now terminating in Sioux City are bound to have a connection further up the Missouri, to transfer to them the Yankton line of the Sioux City & Dakota, which they can use better than it can, preserving the line from Sioux City to Sioux Falls, which gives it two well-placed branches at right angles with its main line, with important towns at each end. Moreover, it can be worked as a north-and-south line, for the Southern Minnesota, which the St. Paul controls, has graded the line for a branch from Sioux Falls north to Flandreau, 40 miles, which, with the line from Sioux City to Sioux Falls, will make a line 130 miles long in the Sioux valley, with *two* outlets to the East controlled by the Chicago, Milwaukee & St. Paul. The only other company that has done anything toward occupying this territory is the Sioux City & St. Paul, which has stations at both Sioux City and Sioux Falls, and has two lines pointing westward which reach within a few miles of the Sioux River.

THE WELLAND CANAL has been looked to as likely soon, when enlarged, to have a very strong influence on rates from Lake Erie to the sea-board, whether by rail or the Erie Canal. It was said that it would be open as early as 1881; but the Toronto *Globe*, after a careful investigation, charges that the work of the improvement has been grossly mismanaged, and that it will probably be five or six years before it becomes available. The *Globe* belongs to the party out of power, and makes the management of this work the basis for an attack upon the administration, for which due allowance should be made.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:

Lake Shore & Michigan Southern, annual meeting, in Cleveland, O., May 4.

Michigan Central, annual meeting, in Detroit, May 6.

New York City & Northern, special meeting, at the office, No. 3 Broad treet, New York, April 2, at noon, to vote on increasing the capital stock and leasing the West Side & Yonkers road.

Southern Minnesota, special meeting, at Lanesboro, Minn., April 13.

Ogdensburg & Lake Champlain, special meeting, in Ogdensburg, N. Y., May 4, to vote on authorizing a consolidated mortgage.

Dividends.

Dividends have been declared as follows:

Cincinnati, Hamilton & Dayton, 3½ per cent., payable April 10. This is the first dividend paid since 1873; before that time the company paid 8 per cent. regularly.

Housatonic, 2 per cent., quarterly, on the preferred stock, payable April 15.

Camden & Atlantic, 3½ per cent. on both preferred and common stock, payable April 19, in preferred stock or scrip.

Nashville, Chattanooga & St. Louis, 2 per cent., semi-annual.

Foreclosure Sales.

The *Greenville & Columbia* road will be sold in Columbia, S. C., April 15, under a decree of foreclosure issued by the Court of Common Pleas for Richland County. The sale will include all the corporate rights, franchises, and privileges of the company, and all the right, title and interest of the Greenville & Columbia Company in the Blue Ridge Railroad, together with all claims and demands against the Blue Ridge Railroad Company.

The *Madison & Portage* road is to be sold in Madison, Wis., April 6, under a decree of foreclosure. It is 39 miles long, from Madison, Wis, to Portage, and has been worked by the Chicago, Milwaukee & St. Paul, which owns most of the securities. It will be bought by that company.

Boston & Albany Mutual Relief Association.

At the annual meeting in Springfield, Mass., March 24, the Secretary reported that there were now 625 members on the roll. The guarantee fund amounts to $827. There was paid out during the past year to members or their representatives in benefits $7,048. Since the formation of the Association the sum of $86,443 has been collected and paid out in benefits.

ELECTIONS AND APPOINTMENTS.

Atlanta & Charlotte Air Line.—A corrected list of the rectors chosen at the annual meeting, March 10, is as follows: Skipwith Wilmer, Baltimore; Hiram Sibley, Rochester, N. Y.; P. P. Dickinson, W. H. Fogg, Abram S. Hewitt, Richard Irvine, Jr., W. B. Isham, Eugene Kelly, B. R. McAlpine, H. W. Sibley, Francis Smith, James H. Young, New York. The board reëlected H. W. Sibley President.

Boston & Albany.—The Massachusetts Legislature has elected Mahlon D. Spaulding, of Boston, a state director, in place of D. N. Skillings, deceased.

Boston & Albany Mutual Relief Association.—At the annual meeting in Springfield, Mass., March 24, the following trustees were chosen: C. O. Russell, W. H. Stearns, Robert Eccles, H. C. Hamilton, J. W. Clark, A. S. Bryant, E. W. Brown; Secretary, Albert Holt.

Boston, Concord & Montreal.—Mr. W. A. Stowell has been appointed Assistant Superintendent, a new office on this road.

Chicago, Burlington & Quincy.—Mr. W. Howard White has been appointed Assistant Chief Engineer (a new office), with headquarters at Burlington, Ia. The office of Chief Engineer R. J. McClure will be removed from Burlington to Chicago.

Mr. R. F. Davis has been appointed Freight Agent of the Chicago Division.

At the annual meeting in Chicago, March 24, the old board was reëlected as follows: James M. Walker, Edward Bangs, Chicago; C. E. Perkins, Burlington, Ia.; John M. Forbes, Charles J. Paine, Sidney Bartlettt, T. Jefferson Coolidge, J. L. Gardner, Jr., Henry S. Russell, Boston; John N. A. Griswold, Newport, R. I.; Peter Geddes, New York.

Chicago, St. Paul, Minneapolis & Omaha Line.—The following appointments are announced for this consolidated line (composed of the Chicago, St. Paul & Minneapolis and North Wisconsin railways, and the St. Paul & Sioux City and its proprietary roads), by circular dated March 20, from H. H. Porter, President:

"The authority and jurisdiction of Mr. J. W. Bishop, General Manager of the St. Paul & Sioux City Railroad, is hereby extended over all the properties and business forming this line.

"The authority and jurisdiction of Mr. E. W. Winter, General Superintendent, and of Mr. F. B. Clarke, General Traffic Manager of the Chicago, St. Paul & Minneapolis and North Wisconsin railways, is hereby extended over all the lines of this property east of the Missouri River.

"Mr. C. D. W. Young is hereby appointed Auditor, and Mr. G. A. Hamilton, Local Treasurer of the three companies.

"The general offices of the three companies will be at St. Paul, Minn.

"Until notice from the respective heads of departments appointed, all reports and remittances will be continued and address as heretofore."

The following additional appointments are announced by circulars of the same date:

"Mr. John F. Lincoln is hereby announced as Superintendent, and Mr. Thos. P. Gere, Assistant Superintendent, of that portion of the St. Paul & Sioux City Railroad situated west of St. Paul and east of the Missouri River, with headquarters at St. Paul, Minn.

"Mr. Hugh Spencer is hereby announced as Superintendent of the Chicago, St. Paul & Minneapolis and the North Wisconsin railways, and that portion of the St. Paul & Sioux City Railroad situated east of St. Paul, with headquarters at Hudson, Wis.

"Mr. J. C. Boyden is hereby announced as Assistant Traffic Manager of that portion of St. Paul & Sioux City Railroad situated west of St. Paul, with headquarters at St. Paul, Minn.

"Mr. J. H. Hiland is hereby announced as Assistant Traffic Manager of the Chicago, St. Paul & Minneapolis and North Wisconsin railways, and that portion of the St. Paul & Sioux City Railroad situated east of St. Paul, with headquarters at St. Paul, Minn.

Connotton Valley.—Mr. Wm. Moffitt has been appointed Superintendent. He has been connected with the Pittsburgh, Ft. Wayne & Chicago road.

Dover & Rockaway.—This company has been organized with the following directors: Columbus Beach, Thomas T. Bovay, Franklin A. Comly, John Kean, Jr., Augustus Lowell, George Richards, L. H. Taylor. The board elected George Richards President; John Kean, Jr., Secretary; Columbus Beach, Treasurer.

Grayville & Mattoon.—At a meeting in Peoria, Ill., March 25, the following officers were chosen: President, C. R. Cummings; Vice-President, John B. Cohrs; Secretary, John Woolf; Treasurer, R. A. Bunker. These are also officers of the Peoria, Decatur & Evansville Company.

Jackson, Lansing & Saginaw.—The following officers were chosen last week: President, H. A. Hayden; Vice-President, H. P. Loomis; Secretary, O. L. Barnes; Treasurer, W. D. Thompson. The road is leased to the Michigan Central.

Jacksonville, St. Augustine & Indian River.—The officers of this company are: President, Alpheus P. Blake, Hyde Park, Mass.; Directors, Frank Jenovar, E. M. Alba, W. Lyon, St. Augustine, Fla.; Morrison Reed, M. Bowder, Jacksonville, Fla.; A. P. Brewer, East Saginaw, Mich.; Warren Currier, St. Louis; G. Hunter, Albany, N. Y.; Alfred S. Giles, Hyde Park, Mass.; James H. Collins, David Loring, Boston; Secretary and Treasurer, David Loring, Boston; Superintendent, James H. Collins, Boston.

Kansas City, Ft. Scott & Gulf.—At the annual meeting in Kansas City, March 24, the following directors were chosen: Charles Blair, B. P. McDonald, Ft. Scott, Kan.; Ira Harris, Rosedale, Kan.; John N. A. Griswold, Newport, R. I.; Francis Bartlett, Sidney Bartlett, John A. Burnham, F. Gordon Dexter, H. H. Hunnewell, Charles Merriam, Nathaniel Thayer, Nathaniel Thayer, Jr., Francis M. Weld, Boston.

Kansas City, Lawrence & Southern.—At the annual meeting in Kansas City, March 24, the following directors were chosen: Frank Jocelyn, Independence, Kan.; Ira Harris, Rosedale, Kan.; O. E. Larned, Lawrence, Kan.; Francis Bartlett, Sidney Bartlett, James H. Blake, J. A. Burnham, Jr., H. H. Hunnewell, Charles Merriam, F. Gordon Dexter, Nathaniel Thayer, Nathaniel Thayer, Jr., Boston; J. W. Denison, New York.

Louisville & Nashville.—The following circulars announce appointments taking effect April 1:

"Mr. D. W. C. Rowland, General Superintendent of the Louisville, New Orleans & Memphis lines and branches, consisting of the following roads: Main Stem and branches (including Owensboro & Russellville Railroad), Memphis Line, Nashville & Decatur Division, South & North Alabama Railroad, and Mobile & Montgomery Railroad, with headquarters at Louisville.

"Mr. J. W. Thomas, General Superintendent of the St. Louis, Nashville & Chattanooga lines and branches, consisting of the Nashville, Chattanooga & St. Louis Railway and branches, the St. Louis & Southeastern Railroad from St. Louis to Evansville., and the Evansville, Henderson & Nashville Division from Henderson to Nashville, with headquarters at Nashville."

"Mr. A. V. Gude is hereby appointed Resident Engineer of all roads owned, operated, or controlled by the Louisville & Nashville Railroad Company."

"Mr. H. T. Curd having resigned the position of Assistant Comptroller the office is abolished."

Louisville, New Albany & St. Louis.—At the annual meeting in New Albany, Ind., the following directors were chosen: John F. Gebhart, Morris McDonald, New Albany, Ind.; W. P. Willborn, Princeton, Ind.; St. John Boyle, John E. Greene, Edward Wilder, Bennett H. Young, Louisville, Ky.; Robert Bell, Mt. Carmel, Ill.; Bluford Wilson, Springfield, Ill.

Maine Central.—At the annual meeting in Augusta, Me., March 24, it was voted to increase the number of directors to 13, and the following were chosen: Darius Alden, Wm. B. Bacon, John B. Brown, Abner Coburn, Wm. G. Davis, George E. B. Jackson, George P. King, George S. Morison, Elijah B. Phillips, Willard P. Phillips, Alfred P. Rockwell, Arthur Sewall, Wm. J. Young. The new directors are Messrs. E. B. Phillips and Young.

Nashville, Chattanooga & St. Louis.—Mr. F. de Funiak, the new General Manager, announces that Mr. J. W. Thomas will continue as General Superintendent of this road, and will also have charge of the St Louis & Southeastern road.

At a meeting held March 29, the board accepted Col. E. W. Cole's resignation, and elected J. W. Thomas President of the company.

New York & Delaware City.—This company has been organized as successor to the Pennsylvania & Delaware, in Delaware, with the following officers: President, Strickland Kneass; Directors, J. N. DuBarry, S. M. Felton, Isaac Hinckley, Wistar Morris, George B. Roberts, Edmund Smith.

New York Central & Hudson River.—Mr. James McFeggan has been appointed General Western Agent, with office in Buffalo, in place of Wm. H. Cummings, deceased. He has been a long time in the service of the company.

E. J. Richards has been appointed Assistant General Passenger Agent.

North River.—The directors of this new company are: Stephen A. Lathrop, Newark, N. J.; Charles J. Hedge, Passaic, N. J.; Charles J. Canda, Wm. H. Cary, George W. Faries, Charles R. Flint, Theodore Houston, Robert Hyslop, Conrad N. Jordan, Jose F. Navarro, Robert U. Simpson, Vincent P. Snyder, Samuel A. Strang, New York.

Pennsylvania.—The new board has reëlected Thomas A. Scott, President; George B. Roberts, First Vice-President; Edmund Smith, Second Vice-President; A. J. Cassatt, Third Vice-President; Joseph Lesley, Secretary; John D. Taylor, Treasurer.

Mr. James McC. Creighton has been appointed General Freight Agent, in place of Stephen B. Kingston, deceased. He has been with the compnny 18 years, holding successively the positions of Station Agent at Pittsburgh, General Agent at Pittsburgh, Superintendent of the Western Pennsylvania Division, Manager of the Empire Line, and, for a few months past, Assistant to the Third Vice-President.

Quebec, Montreal, Ottawa & Occidental.—Mr. A. Davis has been appointed Mechanical Superintendent for the whole line. He has been for some Mechanical Superintendent of the Western Division, was formerly on the Grand Trunk, and was selected by the Dominion Government as a delegate to the Paris Exposition in 1873, and to the Centennial Exhibition.

Southern Kansas.—At the annual meeting in Kansas City, March 24, the following directors were chosen: P. A. Wood, Wellington, Kan.; W. P. Hackney, Winfield, Kan.; Ira Harris, Rosedale, Kan.; Francis Bartlett, Sidney Bartlett, H. H. Hunnewell, Charles Merriam, Nathaniel Thayer, Jr., Boston.

PERSONAL.

—Mr. F. E. Hinckley, well-known as the projector and constructor of the Chicago & Iowa, the Chicago, Pekin & Southwestern, the Chicago & Paducah and some other Illinois roads, was married in Chicago, March 10, to Miss Amelia Smith.

—Mr. Miles R. Martin has resigned his position as General Manager of the Painesville & Youngstown Railroad.

—The Louisville *Courier-Journal* says of Dr. E. D. Standiford's resignation as President of the Louisville & Nashville: "Dr. Standiford was seriously ill for several weeks—at death's door for some days—and although improving now, and able to ride out daily, yet his physicians stated, as a condition for his permanent cure, the absolute necessity of relieving himself from all mental and physical effort for some months to come. It was in obedience to this that his resignation was sent in. Dr. Standiford's labors in behalf of this great road are well understood and appreciated here. He took its presidency at a critical period in its history, and its splendid position at this time is due in a great measure to his great executive ability, his wonderful energy, his indomitable will and his untiring exertions. During his first year of service the change was like magic, the expenses of the road having been reduced several hundred thousand dollars, while more efficient results were at the same time secured, and there is not probably another road in the United States where the net earnings have increased as largely since the panic as the Louisville & Nashville under Dr. Standiford's management. It is a remarkable fact that during his entire presidency of the road until his late illness he never lost a day from its management, and stood at his post through the mobs, riots, strikes and pestilence which it had to encounter; and to-day it is regarded as one of the best organized and disciplined roads in the country. His services were handsomely recognized by the directory, and he has the heartiest wishes of his late associates and the entire public for his speedy and complete restoration to health and active life."

—Gen. Henry Pleasants, a civil and mining engineer of high standing and for several years past Chief Engineer of the Philadelphia & Reading Coal & Iron Company, died suddenly in Pottsville, Pa., March 26. General Pleasants served with much credit during the war, and was the engineer of the famous mine which was exploded under Cemetery Hill at Petersburg, in July 1864.

—It is reported that Col. J. R. Shaler, now Superintendent of the Jeffersonville, Madison & Indianapolis, has been offered the position of Assistant General Manager of the Louisville & Nashville. Also that Mr. A. M. Quarrier is to be appointed Assistant to the President.

—Mr. H. C. Wentworth, General Passenger Agent of the Michigan Central, will celebrate on April 4 the twenty-fifth anniversary of his first entry into the service of the company. He was appointed local ticket agent at Chicago in 1855, and has been with the company in various positions ever since.

—Mr. Wm. H. Ferry, a prominent merchant of Chicago, died at his residence at Lake Forest, near that city, March 26, after a long illness. He was 61 years old. He was largely interested in the Chicago & Northwestern, was formerly a director of that company, and was a director and officer of several of its proprietary roads, and Vice-President of the Chicago, St. Paul & Minneapolis. Mr. Ferry had also been Receiver of the Rockford, Rock Island & St. Louis and the West Wisconsin roads.

—Mr. Geo. H. Hitchings died at Portland, Me., March 29, aged 68 years. He was an old and well-known contractor, having been in the business many years and held large contracts. He built the Worcester & Nashua, the Portland & Rochester, the Knox & Lincoln, parts of the Boston, Hartford & Erie, the European & North American and other New England roads.

TRAFFIC AND EARNINGS.

Railroad Earnings.

Earnings for various periods have been reported as follows:

	1880.	1879.	Inc. or Dec.	P. c.
Two months ending Feb. 29:				
Bur., Cedar Rapids & No.	$349,487	$214,639	I. $134,848	62.8
Net earnings	140,775	74,226	I. 66,549	89.7
Houston & Texas Central	591,832	502,061	I. 89,771	17.9
Net earnings	272,222	191,886	I. 80,336	42.3
Nash., Chatta., & St. L.	396,788	315,312	I. 81,476	25.8
Net earnings	187,357	134,584	I. 52,773	39.2
Northern Central	665,355	538,610	I. 126,745	23.5
Net earnings	238,190	170,295	I. 67,904	36.9
Phila. & Erie*	469,680	449,748	I. 19,912	4.4
Net earnings	155,624	168,693	D. 13,069	7.7
Month of January:				
Grand Trunk	£162,243	£153,661	I. £8,581	5.6
Net earnings	42,408	32,515	I. 9,893	30.4
Third week in March:				
Chic. & Alton	$165,769	$83,371	I. 82,198	98.6
Chic. & Eastern Ill.	23,653	14,797	I. 8,856	59.8
Chic., Mil. & St. Paul	204,000	142,862	I. 61,138	42.8
St. L., Iron Mt. & So.	112,500	89,261	I. 23,239	2.60
Week ending March 12:				
Great Western	$91,734	$85,358	I. $6,376	7.5
Week ending March 20:				
Grand Trunk	$201,257	$152,554	I. $48,703	31.9

* Philadelphia & Erie earnings are included also in Pennsylvania.

Grain Movement.

For the week ending March 20 receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and receipts at the seven Atlantic ports have been, in bushels, for the past seven years:

	Northwestern. Receipts.	Northwestern. Shipments.	Atlantic receipts.
1874	1,849,558	1,013,655	1,364,708
1875	1,398,005	1,087,241	1,727,392
1876	1,574,910	1,005,057	1,860,581
1877	1,200,556	670,822	1,450,695
1878	2,728,322	1,830,874	4,041,054
1879	2,811,876	2,371,995	4,624,474
1880	4,302,860	3,694,550	4,737,406

In everything the business is enormous for the season, and shows a large increase over the preceding week—14 per cent. in Northwestern receipts, 42 per cent. in Northwestern shipments and 12 per cent. in Atlantic receipts. The shipments of the Northwestern markets were never before anything like so large before the opening of navigation, and never before in the history of the trade have the railroads taken so much grain from these markets in a single week. Last August and fall, when the total movement eastward was unexampled, there were very few weeks when the railroads took as much from these markets as one-half of what they carried in this week ending March 20 last. The grain seems to be pushed forward, for the receipts of these markets are larger than their shipments, large as the latter are. The increase is almost wholly in corn, which formed 67 per cent. of the Northwestern and 70 per cent. of the Atlantic receipts. Wheat continues to be held by owners and speculators for higher prices.

Of the Northwestern receipts Chicago had 46.2 per cent., St. Louis 18.6, Peoria 15.6, Toledo 9, Milwaukee 6.7, Detroit 3, and Cleveland 0.9 per cent.

Of the Atlantic receipts New York had 44.3 per cent.; Baltimore, 19.7; Philadelphia, 15.7; New Orleans, 10.5; Boston, 7.6; Portland, 1.9, and Montreal, 0.3 per cent. New York's receipts have taken a sudden leap forward; they were about 70 per cent. more than in the previous week and the largest since navigation closed. Philadelphia's were considerable smaller than in the previous week, and Baltimore's the smallest for four weeks. New York has had so large a proportion of the whole but once before since navigation closed.

The exports from Atlantic ports for four successive weeks have been:

	Week ending March 24.	March 17.	March 10.	March 3.
Flour, bbls.	56,964	50,378	51,835	55,479
Grain, bush.	5,406,028	3,679,890	4,035,901	3,014,553

For the eight weeks ending March 24 the exports for two years compare as follows:

	1880.	1879.	Decrease.	P. c.
Flour, bbls.	422,454	561,147	I. 8,693	24.7
Grain, bush.	26,049,624	27,475,202	1,425,578	5.2

The total exports of grain thus have been not much different from those of last year; but there has been a decrease of 15 per cent. in the wheat and an increase of 4¾ per cent. in corn exports.

Coal Movement.

Coal tonnages are reported as follows for the week ending March 20:

	1880.	1879.	Inc. or Dec.	P. c
Anthracite	346,234	404,459	D. 64,225	15.9
Semi-bituminous	21,678	62,678	D. 41,000	65.4
Bituminous, Penna.	54,686	40,869	I. 13,817	33.8
Coke, Pennsylvania	42,258	25,672	I. 16,586	64.5

The bituminous and semi-bituminous trade to tide-water has been thoroughly demoralized by strikes in the mines and light demand, and is the smallest reported for a long time. The western bituminous and coke trade is kept up by the large demands of the iron furnaces and mills.

Petroleum Traffic.

Shipments from the producing regions in Pennsylvania in January and February were, in barrels:

	1880.	1879.	Increase.	P. c.
January	1,650,409	663,698	986,411	148.7
February	1,392,151	702,729	689,422	98.1
Two months	3,042,560	1,366,727	1,677,833	122.8

Of the shipments of the two months 55 per cent. went to New York this year, against 37 per cent. last year; 12⅝ per cent to Cleveland, against 21¾ per cent.; 11½ per cent. to Philadelphia, against 19¾; 6¾ to Pittsburgh, against 4½, and 5⅝ to Baltimore, against 3 per cent.

Lumber Rates.

The report of the February meeting of the Joint Executive Committee as printed contains an error as to the time when the summer lumber rate shall expire. This rate (on the basis of 30 cents per 100 lbs. from Chicago to New York) will prevail from April 1 to Oct. 31 (instead of October 1, as printed), and it is during the following five months that the winter rate (5 cents higher) is charged.

Chicago Hog Packing.

The number of hogs packed in Chicago in each of the past six years (ending with February), and in the eight months of the "summer packing" (March to October inclusive) and the four of "winter packing" separately have been as follows:

	Summer packing.	Winter packing.	To al.
1874–75	446,368	1,690,348	2,136,716
1875–76	728,781	1,592,065	2,320,846
1876–77	1,315,402	1,618,084	2,933,486
1877–78	1,508,026	2,501,285	4,009,311
1878–79	2,017,841	2,943,115	4,960,956
1879–80	2,155,418	2,525,219	4,680,637

The summer packing was 6.9 per cent. greater, the winter packing 14 per cent. less, and the year's packing 5.6 per cent. less the last year than the year previous. Both the winter and the year's packing were larger, however, than in any previous year. A single firm (Armour & Co.) packed last year 874,000 hogs, which is more than were packed by all the packers of any other city in the world. Another establishment packed 758,000. The first of these had about 103,000 tons of product to ship, or about 8,000 full car-loads, and 4,250 of these in the four winter months, an average of more than 40 car-loads daily. The total Chicago packing in the winter amounted to 290,000 tons, or at the rate of 215 car-loads daily, and the freight on it, if all had gone forward to New York at the winter rate, would have been $2232,000. By far the larger part of the provisions does go forward by rail, but not all by any means in winter, or at winter rates.

Lake Navigation.

The Merchants' Line, of Canada, will put eight steamers on a line between Chicago and Montreal this season, by way of the Welland Canal. The company has two other steamers which will ply on the lower lakes only. It is said that this line has already contracted to carry large quantities of iron and merchandise to Chicago.

Another Canadian line of steamers and sailing vessels will ply between Chicago and Collingwood and will compete for the carriage of grain, flour, etc., to New England points. This is a very broken line, as the Grand Trunk Railway is not used, but after the freight is carried from Collingwood to Toronto by the Northern Railway of Canada, it is transferred to Lake Ontario vessels which carry it to Ogdensburg, where it finds an outlet over the Ogdensburg & Lake Champlain and Vermont Central railroads. It is said that about 5,000,000 bushels of grain went this way last year.

Ten of the Northern Transit steamers will ply between Chicago and Sarnia in connection with the Grand Trunk, and two between Toledo and Sarnia, giving the Grand Trunk a chance at the heavy receipts from the Wabash road. All these lines will be pretty sure to get full cargoes of grain wherever there is grain to get, but that is also true of the numerous other steamer lines to Erie and Buffalo, most of which have been enlarged, and the greater part of these run in connection with the trunk lines.

The most important lake marine news of the week, perhaps, is the break in rates from 7 to 6 cents per bushel for corn from Chicago to Buffalo. The vessels had held out steadily for 7 cents pretty much all winter, and most of them had secured cargoes at that rate; but this movement indicates that the vessel-owners feared that they would not get cargoes if they held out. With this rate to Buffalo and one not much higher by canal (which boatmen are said to be willing to accept), it will not cost more than about 13 cents to get corn from Chicago to New York, and with such a water rate it will be hard for the railroads to get as much as 30 cents per 100 lbs. on much traffic.

Telegrams from the Straits say that the ice in the north

channel was broken up by a storm on the 28th, and there upon vessels at Chicago prepared to leave immediately should further news be favorable. It was then thought that by the 5th of April the grain fleet would be likely to clear the harbor.

The new tonnage added to the lake marine in each of the past six years has been:

Year.	Tons.	Year.	Tons.
1874	74,000	1877	6,500
1875	19,000	1878	13,000
1876	8,500	1879	14,000

It is estimated that the addition this year will be 32,000 tons.

Navigation has been open on Lake Erie for some time, and there have been many cargoes shipped from Detroit and Toledo to Buffalo and Erie. Buffalo harbor is sometimes closed after the Straits are open.

The Union Steamboat Company (owned by the Erie) has on the stocks in Buffalo one of the largest propellors ever built on the lakes.

Southwestern Railway Association.

A dispatch from St. Louis, March 30, says: "The Wabash, St. Louis & Pacific and Chicago & Alton companies have asked for a new arbitration in regard to the award of percentages between St. Louis and Missouri River points. The Missouri Pacific got 41.9 per cent., the Wabash, St. Louis & Pacific 29.3, and the Alton 28.8. The statement submitted to the arbitrators showed that the amount of business done by the three roads from Sept. 1 to the present time amounted to 45 per cent. by the Missouri Pacific, 31 per cent. by the Wabash, St. Louis & Pacific, and 24 per cent. by the Chicago & Alton. It is claimed that these statements did not give the true standard on which to base the awards, because the Missouri Pacific had run up its percentages by cutting the rates and generally violating the agreement."

A dispatch from Chicago, March 31, says: "This Association met here to-day. The Chicago & Alton, Chicago, Burlington & Quincy, the Wabash, St. Louis & Pacific, Hannibal & St. Joseph, Chicago, Rock Island & Pacific, and Kansas City, St. Joseph & Council Bluffs railroads were represented. It was decided by the General Freight Agents to adopt and adjust the new east-bound classification according to the new trunk line classification, whereby there will be 11 classes of matter, to take effect to-morrow. The commission was authorized to equalize rates according to this classification, thereby making rates between St. Louis and Chicago uniform. An arrangement was affected to have an equalized tonnage take effect at once on east and west bound freight."

Bonded Freight from the East to the Pacific Coast.

General Freight Agent, E. P. Vining, of the Union Pacific has issued the following circular to connecting roads:

"Much trouble having been experienced in the transportation of bonded freight between the east and points on the Pacific coast, connecting roads are respectfully requested to comply with the following suggestions relative thereto: Cars should be in good order and as nearly new as practicable. Very few old cars can be sent 3,000 miles without transfer. They should be of the 4 feet 8½ inch gauge. Adjustable-gauge cars will not be taken, as they are unsafe upon the sharp curves met in crossing the mountain ranges. The custom-house manifests should, in all cases, accompany the cars, or be sent on so as to arrive at Council Bluffs before the cars. Full car-loads should be made up as nearly as practicable. When necessary, freight not bonded should be put into the same car to complete the load. All freight in each car should be consigned to the same city. Freight for San Francisco and Sacramento should not be loaded together. Cars loaded with less than 12,000 lbs. of freight will not be taken unless the goods are so bulky as to fill the car with a less weight, and in such case no mileage will be paid for the use of the car."

RAILROAD LAW.

Authority of Company to Lease a Railroad.

In Thomas and others against the West Jersey Co., as successor to the Millville & Glassboro Co., the United States Supreme Court holds as follows:

1. In the absence of express authority in its charter, a company has no right to transfer its road and franchises to other parties and thus render itself unable to perform the duties which its charter directly or by implication imposes.

2. When a corporation like a railroad company has granted to it by a charter intended in a large measure to be exercised for the public good, the due performance of this function being the consideration of the public grant, any contract which disables that corporation from performing such function, which undertakes without consent of the state to transfer to others the rights and powers conferred by the charter, and relieve the grantees of the burden which it imposes, is a violation of the contract with the state, and is void as against public policy.

3. Plaintiffs cannot found a right of action upon an agreement void for want of corporate authority and forbidden by the policy of the law.

THE SCRAP HEAP.

Fast Work in a Car Shop.

As an exhibition of rapid work, the result of last week's business at the car shops of the Consolidated (New York, New Haven & Hartford) road in this city furnishes an almost incredible instance. From 7 a. m. Monday, the 15th inst., to Saturday noon, there were constructed 100 eight-wheeled coal cars, with a capacity of 18 tons each, which were finished at the following rate each day: Monday, 14; Tuesday, 18; Wednesday 19; Thursday, 20; Friday, 18; Saturday, 11. The work was performed under the personal supervision of Mr. Loren Packard, the efficient Master Car-Builder, to whose energy and ability may be ascribed the successful completion of the work. After such an extraordinary week's work, the force of the shops will take it comparatively easy this week. Next week, it is proposed to put up 100 six or seven-ton coal dump-cars, and these will be followed probably by the building of 200 box-cars.—*Hartford Courant, March 25.*

A Powerful Testing Machine.

E. & T. Fairbanks & Co. have completed two of the three large testing machines lately ordered by the government to be used in testing the strength of iron and steel. These machines are very compactly built, occupying but about five feet square on the floor, and are about ten feet high—all of iron and steel, and weighing four tons each. The metal to be tested is clamped securely between two heavy iron collars which are drawn apart by two heavy screws turned gradually by hand with a combination of gear wheels. These testers are really weighing-machines also, having levers, beams, poise, etc., and as fast as the power is applied to the metal to be tested, the poise on the scale beam is moved automatically, indicating the number of pounds of strain applied. At a trial, Wednesday, a bar of steel an inch and an eighth wide and five-sixteenths thick, stood a strain of over forty-one thousand pounds before it was pulled apart; and before it broke it was reduced in width an eighth of an inch, and in thickness nearly a sixteenth. So heavy and powerful are these machines that there was no perceptible recoil when the steel parted. The one tested on Wednesday is going to Cincinnati; and just to test its strength, a heavy bar of steel was placed in its jaws, and *one hundred thousand pounds* strain put upon it without any visible effect.—*St. Johnsbury (Vt.) Caledonia.*

The Conductor Who Backed Down.

Before the train left Bay City, yesterday morning, for Detroit, a woman nearly six feet tall and having a complexion like a fresh-burned brick, entered the depot, followed by a dog almost as big as a yearling calf. Having purchased a ticket, the woman stood beside the train until the conductor came along, when she led off with:

"You have been pointed out to me as the boss of this train."

"Yes'm," was his modest reply.

"Well, I'm going to Detroit fur the old man."

"Yes."

"An' this dog is going along with me. He goes where I go every time in the year."

"Yes, he can go down in the baggage car."

"Not any he can't! That's what I stopped you for. This 'ere dog is going 'long in this 'ere car and nowhere else!"

"The rules of the road—"

"Rules be hanged! My old man can be banged around by everybody, and he never demands his rights; but Lucinda hain't Thomas—not by a jug full.

"Madam, let me——"

"I don't want no clawing off!" she interrupted, as she peeled a pair of black mittens off her big red hands. "I'm going and the dog's going, and what I want to knew is whether you want to raise a row on the cars or have it now and here?"

The conductor looked the dog over and was about to shake his head, when the woman began untying her bonnet and quietly remarked:

"I s'pose, being as I am a woman, it would be no more than fair for the dog to sail in with me. Come here, Leonidus!"

"Madam," replied the conductor, as he felt a shiver go up his legs, "take your dog and get aboard!"

"Honest Injun?"

"Yes."

"No row after the cars start?"

"No."

"Then that settles that, and I'm much obleeged, though you did kinder hang off at first. Leonidus, foller me and behave yourself."—*Detroit Free Press.*

OLD AND NEW ROADS.

Altoona & Cherry Tree.—It is proposed to build a railroad from Cherry Tree, Pa., southeast by Carrolltown and Chest Springs to the Pennsylvania Railroad near Altoona, a distance of 30 miles. The line will serve a coal and lumber district.

Atchison, Topeka & Santa Fe and the Denver & Rio Grande.—The United States Circuit Court has made a final decree, ratifying and approving the compromise agreement which is to end all litigation between these companies. It will be remembered that this agreement provides for a division of disputed territory, the Rio Grande to have the line through the Arkansas Cañon and to Leadville, and the right to build to the San Juan Region, while the Santa Fe is to have the New Mexican business; that is, the Rio Grande is to have all the territory west and northwest of Pueblo and the Santa Fe all south and southwest of that place. The Rio Grande is to pay the Santa Fe Company about $1,400,000 for work already done in the Arkansas Cañon and for materials bought for that line. The agreement is now finally fixed and determined, and is to stand for ten years.

Atlanta & Richmond Air Line.—It is reported that this company has bought the Knoxville & Charleston road, now in operation from Knoxville, Tenn., to Marysville, 16 miles, with the purpose of extending it southwest to its own line at Mt. Airy, Ga. The line would probably follow the cañon of the Tennessee over into North Carolina and cross into Georgia through Rabun Gap, following for most of the way the line surveyed for the Blue Ridge road.

Baltimore & Northeastern.—This proposed road is to run from Baltimore northeast by Belair, to a point where the boundary lines of Maryland, Delaware and Pennsylvania meet, and thence to Philadelphia by the most direct possible route. The line is parallel to the Philadelphia, Wilmington & Baltimore, and a few miles to the northwest of that road, crossing the Susquehanna between Lapidum and Conowingo. A bill to charter the company is now before the Maryland Legislature; it names as incorporators John Moores, Johns H. Janney, Israel D. Carter, Thomas Q. Primrose, Henry C. Robinson, John B. Dougherty, Walter M. Francis, William Calhoun and George W. Wharton.

Central Iowa.—In answer to the Boston Committee's circular (noted last week) President Cate says that all the old claims are paid off except a small one for counsel fees, which is contested. The net earnings, therefore, belong to the bondholders and should be divided. He does not, however, explain why there is no money to be divided, nor why it should be necessary to make new obligations for the purpose of the division.

It is stated that the Boston Committee will take steps to enjoin the company from issuing new obligations as proposed, and from making any payments to the bondholders until the money is on hand.

Central, of New Jersey.—The wages of all employés on the Long Branch and New Jersey Southern Disvisions were raised April 1, those receiving under $50 per month getting about 20 per cent., and those over that amount 10 per cent. increase.

Champaign, Havana & Western.—It was recently announced that a controlling interest in this road had been sold to parties represented by Drexel, Morgan & Co., of New York. It is now stated that the purchase was in the Wabash, St. Louis & Pacific interest and that the road is to be added to that company's system by consolidation.

The road was formerly the Western extension of the Indianapolis, Bloomington & Western, and has a line from Champaign, Ill., westward to Havana on the Illinois River, 100 miles, with a branch from White Heath to Decatur, 31 miles. It is not a valuable property by any means, but might, if its proposed extension from Havana to Keokuk is built, interfere with some of the Wabash lines. The purchase is probably made to prevent anyone else from securing it.

Chicago & Grand Trunk.—At the meetings held in Chicago and elsewhere last week the agreements of consolidation were ratified, and this company formed by the union of the Northwestern Grand Trunk, the Chicago & Northeastern, the Indiana and the Michigan Railroad companies. This places the whole Grand Trunk line from Port Huron to Chicago in the possession of a single company.

Chicago & Western Indiana.—A dispatch from Chicago, March 31, says: "Judge McAllister has filed an opinion declaring invalid the ordinance granting right of way into the city to the Western Indiana Railroad. The company has presented a draft of a new ordinance to the Board of Aldermen for approval."

Chicago, Milwaukee & St. Paul.—Work has been begun on the Eden cut-off, from the Iowa & Dakota Division to the newly-leased Sioux City & Dakota road at Eden. It is intended to shorten the distance to Sioux City by the Iowa & Dakota Division, which now crosses the Sioux City & Dakota at Canton, 15 miles north of Eden and 67 miles from Sioux City.

The extension of the Iowa & Dakota Division from the Missouri River toward the Black Hills is to be pushed. A contract for grading from the present terminus westward has been let to Langdon & Co., of Minneapolis.

It is said that the Hastings & Dakota Division is to be extended from the present terminus at Ortonville, Minn., west by north 40 miles into Dakota this season.

Chicago, Rockford & Northern.—P. B. Shumway and others, who claim to hold a majority of the stock of this company, have begun a new suit in Chicago to oust the present officers on the ground that they have not been legally elected, and are now holding their office to the damage and detriment of the legal stockholders and directors.

The road is the branch of the Chicago & Iowa from Rochelle, Ill., to Rockford.

Chicago, Rock Island & Pacific.—At a meeting of the board in New York last week the following resolutions were passed, and are now sent out to the stockholders in circular form:

"*Resolved*, That the proposition that the Chicago, Rock Island & Pacific Railroad Company purchase the property, rights, franchises, and privileges of the Avoca, Harlan & Northern Railroad Company, and of the Guthrie & Northwestern Railroad Company, be submitted to a vote of the stockholders of this company at their annual meeting to be held at the office of this company in the city of Chicago, on Wednesday, the second day of June, in the year 1880.

"*Resolved*, That the proposition to consolidate the capital stock, property, rights, franchises and privileges of the Chicago, Rock Island & Pacific Railroad Company with the capital stock, property, rights, franchises and privileges of the Iowa Southern & Missouri Northern Railroad Company, the Newton & Monroe Railroad Company, the Atlantic Southern Railroad Company, the Avoca, Macedonia & Southwestern Railroad Company, and the Atlantic & Audubon Railroad Company into a consolidated railroad company with an authorized capital of $50,000,000, and such powers as shall be assumed in the articles of consolidation, be submitted to a vote of the stockholders of this company at their annual meeting, to be held at the time and place named in the preceding resolution."

The resolutions explain themselves. The Iowa Southern & Missouri Northern owns the Southwestern line to Leavenworth and Atchison, and the Indianola and Winterset branches. The other companies own short branches in Iowa, nearly all built last year, or now under construction. The stock of all the companies to be consolidated is owned by the Rock Island Company. The stock of that company by the last report was $20,980,000, so that the increase will be $29,020,000; the bonded debt was $9,998,100, and there are $5,000,000 bonds on the Southwestern line. The capital account, after consolidation, will be $50,000,000 (about $39,000 per mile) in stock, and about $15,000,000 ($11,700 per mile) in bonds.

Cincinnati & Ohio River.—It is said that arrangements have been completed to build this road from New Albany, Ind., up the north side of the Ohio River some 95 miles to Aurora, whence it is proposed to use the Cincinnati, Indianapolis, St. Louis & Chicago track into Cincinnati.

Cincinnati Southern.—The stockholders of the Cincinnati Railway Company, which works this road under lease from the Trustees, are to vote on a proposition to increase the capital stock to $2,000,000, to provide means for buying new equipment and providing other facilities for working.

Connecticut Central.—Messrs. Wm. Birnie, Willis Phelps and D. D. Warren, who owned $302,000 of the $325,000 bonds of this road, have sold them at 80 to Kidder, Peabody & Co., of Boston, who are understood to be acting for the New York & New England Company. Holders of the remaining $23,000 have the option of selling them at the same price. What the New York & New England will do with its purchase is not known, but it is said that no change will be made at present. When the New York & New England finishes its line to Brewsters, this road may be made part of a line from Springfield to New York; or it may be made part of a Springfield-Boston line by extending the Rockville Branch two miles to Vernon.

The road runs from East Hartford, Conn., up the Connecticut to the Massachusetts state line, 20 miles, with a branch to Rockville, 7 miles, and is continued to Springfield, 7¼ miles, by the leased Springfield & New London line. From East Hartford it uses the New York & New England bridge and track into Hartford. It was built as an extension of the Connecticut Valley road, but was worked as part of that road only a short time.

Connotton Northern.—This company has filed articles of incorporation to build a narrow-guage road from Canton, O., due north to Fairport Harbor, on Lake Erie, a distance of about 70 miles.

Connotton Valley.—The extension of this road from Oneida, O., northwest to Canton, to connect with the Valley road, is now completed, and trains were to begin running April 1. The extension is 17 miles long, making the whole road 36 miles long, from Canton to Dell Roy. It is of 3 ft. gauge and is chiefly a coal road.

Dallas & Wichita.—The United States Circuit Court has granted a decree of foreclosure and sale against this road, and ordered all the property of the company to be sold after 90 day's notice. The company gave notice of appeal.

The road is completed from Dallas, Tex., to Lewisville, 21 miles, and there are about $300,000 bonds outstanding, most of which are now owned by Jay Gould. The road has been in trouble from dissensions among the managers almost ever since it was started.

Denver & Rio Grande.—The agreement with the Atchison, Topeka & Santa Fe having been finally concluded, a very large force is to be put at work at once on the line from Cañon City to Leadville. The heaviest work, through the Grand Cañon, is already done.

Detroit, Grand Haven & Milwaukee.—The Detroit *Post and Tribune* says: "On and after April 1 this road will resume its through passenger traffic to Chicago, Milwaukee and all points west and northwest. The Milwaukee line will be composed of first-class steamers, which have been thoroughly overhauled, the cabins and state-rooms newly and handsomely refurnished, and are not surpassed for elegance and comfort by any steamer on the lakes. A new

feature in the equipment of the Detroit, Grand Haven & Milwaukee railway is a line of sleeping cars owned by the company, and run on all night trains. These cars were built especially for the company, are furnished in first-class style, and contain no upper berths, an innovation which permits of perfect ventilation, and affords ample room. This road is the only line in the state owning and running the Horton reclining chair car on day trains."

Dover & Rockaway.—This company has been organized to build a railroad from Port Oram, N. J., to Rockaway, about five miles. The capital stock is to be $100,000. It is intended to be a branch of the New Jersey Central's High Bridge Branch, and will reach several valuable iron mines.

Eastern.—The engines on this road are hereafter to run through between Boston and Portland, so that there will be no change on through trains. A fast express train is soon to be put on which will run the 37 miles from Boston to Newburyport in about an hour.

East Tennessee & Western North Carolina.—The Knoxville (Tenn.) *Whig and Chronicle* of recent date, says: "The owners of the celebrated Cranberry magnetic ore have been in conference with the management of the East Tennessee, Virginia & Georgia railroad, with reference to the construction of the railroad from Johnson City to the mines. The owners of the mines expressed a confidence of their ability to build the road if the East Tennessee, Virginia & Georgia road would aid them to the extent of $150,000. Aid to the amount asked was promptly promised, and Mr. McGhee, Vice-President, who has just returned from Philadelphia, was informed by Gen. Pardee that he was confident of their ability to supply the remainder of the funds, and expressed the hope that within a few days he would be able to announce that the money was all raised and that work would be at once commenced.

"This will be a matter of great importance, as it will assure the erection of blast furnaces at this place. The completion of the Cincinnati Southern, will necessarily take off a portion of the wholesale trade of Knoxville and our people should encourage and take an interest in manufacturing, and seek new fields for the distribution of business."

Evansville & Peoria.—The city of Evansville, Ind., has refused to vote the $200,000 asked for by this company, which proposes building the Indiana section of the Peoria, Decatur & Evansville road.

Ft. Wayne, Warsaw & Brazil.—This company has filed articles of incorporation in Indiana, for a narrow-gauge road from Ft. Wayne, southwest to Terre Haute, about 165 miles, through a country already pretty well covered with railroads.

Indianapolis, Decatur & Springfield.—The contractors, Irwin & Heustis, who built this road from Guion to Indianapolis, have filed liens to secure a balance of $45,000 claimed to be due to them from the company.

Jacksonville & Fernandina.—This company has bought land for a depot in Jacksonville, Fla., and announces its intention of beginning work at once on its line from that city, northeast to Fernandina, about 25 miles. The present route by rail is very indirect—from Fernandina northwest to a point due west of Jacksonville and then east.

Jacksonville, St. Augustine & Indian River.—Work has been begun on this road, which was projected several years ago. It is to run from the St. Johns River, opposite Jacksonville, Fla., south by east to St. Augustine, about 40 miles. With the exception of a few miles near Jacksonville, the country on the line is entirely a wilderness. A few years ago, there was not a single house on the road for 30 miles from St. Augustine.

Jefferson & Eastern.—This company has been organized to build a railroad from Jefferson, Tex., eastward to Carolina Bluffs, La., on Red River, about 35 miles.

LaGrange Tap.—Arrangements are being made to build this road from LaGrange, Tex., east by south down the Colorado River to Alleyton, on the Galveston, Harrisburg & San Antonio. The distance is about 30 miles through a well-settled country. Part of the proposed line was graded many years ago by the old Buffalo Bayou, Brazos & Colorado Company as part of a road to Austin.

Leadville & Ten Mile.—This company has been organized to build a narrow-gauge road from Leadville, Col., to the Ten Mile Mining District. Surveys are to be made as soon as the snow will permit.

Lehigh & Eastern.—In the litigation over the ownership of the stock of this company, the Pike County (Pa.) Court of Common Pleas has dissolved the injunction obtained by Wm. H. Williams, now President, to restrain Simon P. Kase from selling or transferring 8,100 shares of stock. This decision apparently confirms the title of Kase to the stock.

Logansport, Crawfordsville & Southwestern.—The receivership is finally closed, the court fixing the compensation of Receiver Claybrook at $15,739, and passing his final accounts. The road was sold and reorganized some months ago.

Long Island.—The New York Supreme Court has granted Receiver Sharpe permission to lease the Brooklyn & Montauk Railroad (formerly the Southern Railroad of Long Island) for 50 years, at a rental of 25 per cent. of the total net earnings of the Long Island Railroad Company and its leased lines; and also to lease the New York & Flushing Railroad for the same time at an annual rental of $18,000.

The Receiver has also asked the Court to ratify a contract with the New York, Woodhaven & Rockaway Beach Railroad Company. The latter company is to be allowed to use the Long Island track and terminal facilities between Rockaway and Long Island City and Woodhaven for 33⅓ per cent. of the gross earnings, and between Rockaway and Flatbush avenue for 45 per cent. of the gross earnings. The Rockaway company is also to furnish the Long Island company money to build a second track from Long Island City to Fresh Pond. The contract is for fifty years.

Louisville & Nashville.—A special meeting of stockholders was held in Louisville, March 26. The act lately passed by the Kentucky Legislature was read, amending the charter so as to allow the company to operate, lease or purchase any railroad in any other state or states, and also to purchase and hold a majority of the capital stock of any railroad company chartered by any other state or states in order to secure to the company the control in the management and operation of the said railroads. Also an act was read amending the charter so as to enable the company to borrow money for the interests of the stockholders, and to that end to execute and sell its negotiable mortgages upon its rights, franchises and privileges, and its railroads and other property, to secure said bonds. Both of these acts were unanimously approved.

The meeting then voted successively to approve the purchase of a controlling interest in the Nashville, Chattanooga & St. Louis; the purchase from John J. Cisco and others of a controlling interest in the Mobile & Montgomery; the purchase from D. F. Sullivan of the Pensacola, and the Pensacola & Selma roads; the purchase of the Nashville, Chattanooga & St. Louis Company's interest in the Evansville, Owensboro & Nashville, and its lease of the St. Louis & Southeastern; the agreement for the purchase of the New Orleans & Mobile road; the contract with the Union Express Company, and the purchase of the Georgia Western.

In relation to the Georgia Western President Newcomb said that the road-bed extended 27 miles west from Atlanta, and with small expenditure it could be laid with track. The road could be extended to Birmingham or Blount Springs by an outlay of from $2,500,000 to $3,000,000. It is the belief of the management that contingencies may arise when an independent line into Atlanta will be a necessity. Parties in New York offer to aid the company in building the road, but the acceptance of such aid is, of course, optional. The management regard the price paid for the franchise—$35,000—as a mere bagatelle compared with the advantages derived.

Madeira & Mamore.—The Philadelphia *North American* says: "The confirmation by the British House of Lords of the decision of the Court of Appeals, restoring the Bolivian loan to the bondholders, as mentioned in the *North American* of yesterday, ends the litigation of years, and voids the contract of Messrs. P. & T. Collins for the building of the Madeira & Mamore Railroad. This railroad company was formed about ten years ago, together with the Bolivian Navigation Company, with liberal concessions from the Brazilian and Bolivian governments, whose countries were to be benefitted by the resulting commerce. Six million dollars of bonds issued by the Bolivian government sold in London at 65 per cent., and thus almost $4,000,000 were placed in the Bank of England to pay the expenses of construction. The Public Works Construction Company of England, contracted to build 180 miles of the road around Madeira Falls; but, after several expeditions, abandoned the enterprise as impracticable, and compromised with the suing railroad company. The bonds fell to a very low price, the buyers asking an order of the court to distribute the $4,000,000 *pro rata* among the bondholders. The Master of the Rolls, however, deciding that the money could only be used to build the road, Messrs. P. & T. Collins, of Philadelphia, contracted to do it for about $6,000,000; but when the first payment was due, the bondholders secured an injunction to stop payment. Appeal after appeal followed, but this decision is final."

Milwaukee, Lake Shore & Western.—On March 29 trains began to run through to the new Northern terminus at Norrie, in Marathon County, Wis., 190 miles from Milwaukee, and seven miles from the late terminus at Carbonate.

Monarch Pass, Gunnison & Dolores.—This company has been incorporated in Colorado to build a railroad from the Arkansas River at Cleora, near the mouth of the South Arkansas, through Monarch Pass and by the Tumichi, Gunnison and Uncompahgre rivers to Rico and Dolores.

Morgan's Louisiana & Texas.—Track on this road has now reached Vermillionville, La., 18 miles south by west from the late terminus at New Iberia and 143 miles from the eastern terminus at Algiers, opposite New Orleans. The total extension from the old western terminus at Morgan City is 63 miles. The road is now completed, the line from Vermillionville westward belonging to the Louisville Western Company, which is now hard at work on the gap of about 40 miles still remaining to complete the line from New Orleans to Houston, which was first projected many years ago.

Nashville, Chattanooga & St. Louis.—At a meeting of the board in Nashville, Tenn., March 27, the following statement was presented for the six months from Oct. 1, 1879, to March 31, 1880:

Net receipts, after deducting taxes and interest on bonded debt	$243,528.06
Profit on 4,000 tons steel rails sold	106,605.01
Total	$350,133.07

This is a little more than 5 per cent. on the stock, but the board decided to declare only the usual dividend of 2 per cent., which will require $136,977, leaving $213,156.07 to be carried to surplus account.

New York & New England.—The Boston *Advertiser* says of the negotiations between this company and the Harbor and Land Commissioners about the South Boston flats property:

"The facts, briefly stated, are these: The company now occupies the 25-acre lot of filled land on Fort Point Channel, at a low rent, the lease terminable at a year's notice. Here the greater part of its freight business is transacted, but access to it is difficult, and improvements cannot be made while the tenure is so uncertain. 2. The company has agreed to take from the Boston & Albany its 50 acres adjoining at the price which the latter company was to pay the Commonwealth, and to carry out its contracts, the Boston & Albany throwing in what it has already expended in filling. 3. For the purpose of getting access to this property the company desires to purchase 12 acres unfilled adjoining the Boston & Albany lot, enclosed by B street and Eastern avenue. The New York & New England Company made to the Commissioners several offers, all of which were refused. The last offer was to buy the 25-acre lot at the value put upon it by the Boston assessors in May, 1879; that is, 62½ cents a foot, or about $750,000. For the fifty acres beyond it offers to pay to the state the amount due from the Boston & Albany as ascertained by the engineer's measurements. For the 12-acre lot, now used only as a place for dumping street sweepings, and 10 feet under water at high tide, assessed at five cents a foot, the company offers to pay 20 cents a foot, and to fill it for immediate use.

"This and every other proposition, as we have said, the Commissioners refused, on one pretext or another, and with an emphasis which seemed to show that they had determined that this road should not have a foothold on this territory on any terms."

New York Central & Hudson River.—A report is current that the Gould syndicate has offered to take 100,000 shares of stock from Mr. Vanderbilt in addition to that already bought, making 350,000 shares in all. It is impossible to say, at present, whether this report has any basis of fact or not. The syndicate has completed payment for the shares already bought, and now announces that it has no more stock to sell.

New York, New Haven & Hartford.—Surveys are being made for a branch line from Windsor, Conn., on this road, west three miles to the thriving manufacturing village of Poquonnock. It is understood that the branch will be built if it can be done at a reasonable cost.

Arrangements are in progress for a connection between this company's Harlem River and Portchester Branch at Mott Haven, and the elevated railroad lines in New York. The connection will be with the Third or Second Avenue Line, and will require a new bridge over the Harlem River. A company has been organized to build the line.

The Hartford (Conn.) *Courant* says of the Suffield Branch: "But this branch has got to a point now where it is utterly valueless. When it was built there were several heavy capitalists and tobacco speculators, who did a very large freighting business living in Suffield. Most of these men have failed or died. At the time they were doing so much, the tobacco trade was in comparatively narrow limits. So fickle was the market and so well kept in hand in Suffield, that it was not an uncommon thing to ship the same tobacco back and forth from Suffield to New York two or three times, and this made a good freighting business. When the road was built, local traffic was not the only idea, as it was then in contemplation to extend it to Westfield, a distance of 12 miles, and connect with the Boston & Albany road, and this may yet be done, as it will give the Consolidated road more direct western connections."

North River.—This company has filed articles of incorporation to build a railroad from some point on the Jersey City & Albany road in Rockland County, N. Y., up the west side of the Hudson to Albany, about 105 miles. Provision is also made for a branch to Schenectady and another to some point on the New York, Ontario & Western in Sullivan County, each about 30 miles long.

New York, Pennsylvania & Ohio.—The following general order from the President, Gen. J. H. Devereux, is dated March 24:

"The railroad and its branches between Salamanca, in the state of New York, and Dayton, in the state of Ohio, heretofore known as the Atlantic & Great Western Railroad, have passed into the possession and control of a new company, and hereafter will be operated as the New York, Pennsylvania & Ohio Railroad.

"All officers and agents of the Receiver are hereby continued in their respective positions, under the New York, Pennsylvania & Ohio Railroad Company.

"Agents will be governed by the circular instructions of the Auditor as to the proper manner of conducting and reporting their office business for the month of March.

"The officers of connecting roads are requested to follow the change of name of the company in their current statements, reports and balances."

General Order No. 1, from General Superintendent Cooper, dated March 29, is as follows:

"Annual, or other passes, issued by the Receiver or other officials of the Atlantic & Great Western Railroad, will be honored by this company for the term specified on such passes."

And general order No. 2, of the same date is as follows:

"The Book of Instructions issued May 1, 1877, together with general or special orders issued subsequently, and not abrogated, also all time-tables in use at this date, will remain in full force and effect until further notice."

Ogdensburg & Lake Champlain.—The Legislature of New York having passed the act authorizing this company to make a consolidated mortgage for $5,500,000, it is to be submitted to the stockholders for their action. Of the bonds to be issued it is proposed to exchange $3,000,000 for the present bonds and the $2,000,000 preferred stock, and to use the rest for steel rails, new cars an elevator at Ogdensburgh and other improvements.

Oregon Railway Company.—The Oregon Railway Company (limited) is a corporation mainly composed of Scotch capitalists, who propose to build a railroad from Portland to a point on the Willamette River, near the mouth of the Chehalem, and thence branching to the southwest, through Dayton, Sheridan and Dallas to King's Valley, and to the south through Silverton, Scio and Brownsville to Springfield, in Lane County.

Ultimately, it is intended to extend this road from Springfield through southeastern Oregon. The projectors say that their road will run through the choicest portions of the Willamette Valley, and, unlike the Oregon & California roads, be far enough away from the Willamette not to compete with that river. Thirty miles are now in running order and seventy miles more are to be completed by Oct. 1. The portion now in operation is the Willamette Valley road, built two years ago. It is proposed to build 100 miles more in 1881.

Pennsylvania.—The following statement was made public by the President on March 29: "The board of directors, in accordance with the statement contained in the last annual report, have directed a restoration of the pay of all persons in the service of the company to the compensation in force at the time of the reduction of June 1, 1877, to take effect from and after April 1 next."

Pennsylvania & Delaware.—The Pennsylvania end of this road was recently reorganized as the Pomeroy & State Line, and leased to the Pennsylvania Railroad Company. The Delaware section has now also been reorganized, the purchasers forming the New York & Delaware City Company. This end is to be leased to the Philadelphia, Wilmington & Baltimore Company, which will use the section between Newark and Delaware Crossing as a cut-off or connection between the main line and Delaware Division, and work the rest as a branch.

Portsmouth & Dover.—In the suit between this company and the Eastern, the Court has decided that the capital stock of the Portsmouth & Dover was $757,800, as claimed by that company, and that $22,734 was due as rental July 1, 1879, and is now due the company, with interest from that date. The Court allows the claim of the Eastern to the amount of $11,200. This is to be added to the stock, making it $768,000.

Rochester & State Line.—Argument was heard last week on the application of the Attorney General of New York for the appointment of a receiver to replace the one heretofore appointed at suit of the Trustee under the mortgage. The Attorney General's application is based on the insolvency of the company.

St. Louis, Iron Mountain & Southern.—The stock trust having been terminated and the stock delivered up by the trustees, notice is given that holders of the certificates representing trust stock can exchange them for ordinary stock certificates on presentation to the Farmers' Loan & Trust Company in New York.

Securities on the New York Stock Exchange.—The following securities have been placed on the lists at the New York stock Exchange:

Central Iowa.—Common stock, $4,925,200; first-preferred stock, $907,000; second-preferred stock, $1,167,800; first-mortgage bonds, $3,700,000; coupon debt certificates, $629,000.

Louisiana & Missouri River.—Common stock, $2,272,200; preferred stock, $1,010,000.

Pittsburgh, Titusville & Buffalo.—Common stock, $6,375,000; preferred stock, $750,000. The shares are 50 each.

St. Louis, Vandalia & Terre Haute.—First-mortgage bonds, $1,899,000; second-mortgage bonds, guaranteed, $1,600,000, second-mortgage bonds, not guaranteed, $1,000,000.

St. Paul & Sioux City.—Additional common stock, $1,050,000; preferred stock, $1,287,500; bonds, $1,287,500, all to be issued on lines lately acquired.

Sioux City & Pacific.—Negotiations are said to be in

progress for the lease or sale of this road to the St. Paul & Sioux City Company. The lines will come in direct competition beyond the Nebraska line when the Sioux City connection is completed with its lines to Omaha.

Skowhegan & Athens.—The town of Athens, Me., has voted $15,000 in aid of this road, the amount not to be paid until the road is finished. The proposed line is from Skowhegan, the terminus of a branch of the Maine Central, northward to Athens, 12 miles.

Sonora Railway.—Mr. W. R. Morley, of the engineer corps of the Atchison, Topeka & Santa Fe Railroad, recently returned to Colorado after making a general reconaissance of the route of this road all the way from the present terminus of the Atchison, Topeka & Santa Fe to the Gulf of California at Guaymas. The general route of the road, according to his indications, will be from Guaymas (which is just below the 28th parallel, or 120 miles further south than New Orleans), nearly due north about 100 miles to Hermosillo, thence northeastward up to the Sonora valley by Ures and Arispe, entering the United States near San Bernardino, which is nearly 200 miles west of the latitude of El Paso, 30 west of the line between New Mexico and Arizona, and less than 100 east of the latitude of Tucson, and distant in an air line about 250 miles from Guaymas and 350 from Sante Fe. The mountain range must be crossed in New Mexico, as it is almost impracticable in Mexico, the ascent being very abrupt here when the continent is narrow. Besides, the route west of the mountains is the most direct. For hundreds of miles the Sierra Madre is said to be passable even by mule only in one place. But just above the Mexican border it spreads out into a plateau. The Atchison, Topeka & Santa Fe will be continued southward, it is said, down the Rio Grande perhaps as far as Santa Barbara, and then turned sharply to the southwest to meet the Sonora Railway. Mr. Morley reports that Guaymas is a town of several thousand of inhabitants; and that the country on the line has great mineral wealth, and is good for grain, fruit and stock-growing. He reports that there are about three times as many women as men in the state, and this he attributes chiefly to slaughters by the Apaches, who now, however, are troublesome only in one corner of the state. Mr. Morley left Las Vegas March 1 on his way to Guaymas *via* San Francisco. At San Francisco he was to take material to begin the construction of the Sonora road at Guaymas. He intends to put two hundred men at work grading, and get his laborers as far as possible in the country. The rails are to be brought to Guaymas from England, and, in accordance with the charter of the road, will be admitted free of duty. The line of the Southern Pacific will be crossed, apparently, about half-way between Tucson and the Rio Grande, which point will very likely be reached by both roads within a year. Mr. Morley thinks that the connection between the Sonora and the Atchison, Topeka & Santa Fe will be made in the course of two years.

South Carolina.—Receiver Fisher has made a statement which gives the earnings of this road from Oct. 1, 1878, to Jan. 31, 1880, as follows:

Gross earnings	$1,546,501
Expenses	937,323
Net earnings	$609,178

The Receiver states that the management of the road has been reorganized, the road and equipment much improved, and that the whole property is now in good order. Interest on the first and second-mortgage bonds has been paid when due. He states that all rumors of combinations with other lines are unfounded.

South Pacific Coast.—Tunnel No. 3 on this road is now through and will be ready for the passage of trains in a few days. There is now no obstacle remaining to the completion of the road through to Santa Cruz, and it is expected that the track will be all laid and trains running before the end of April. The tunnel just finished is 6,155 feet long and presented many difficulties; it has also been the scene of two fatal explosions by which nearly 50 Chinese laborers were killed.

Troy & Greenfield.—A bill now before the Massachusetts Legislature provides that at any time before July 1, 1886, the old Troy & Greenfield Company may make application to the Supreme Court, which shall thereupon proceed to fix and determine the amount which the state advanced to the company, and the amount which it has since expended in finishing the road and the Hoosac Tunnel. The Court may deduct from the amounts so spent such sums as it may deem proper, provided it can be shown that extravagant prices were paid for any of the work; it shall also deduct all net earnings received by the state, and shall add interest on all money paid out by the state up to the date of the final audit. The Court shall finally state and determine the amount to which the state is entitled for all its expenditures on the road. The Troy & Greenfield Company shall then have power to redeem the road and take possession upon paying the amount so determined, within six months from the date of the decree. It is thought that the bill will pass, but it is not probable that the road will be redeemed, as the cost would be too great.

Union Pacific.—In the Holmes suit to recover on Kansas Pacific income bonds, the United States Circuit Court refuses to enjoin the payment of a dividend by this company, holding that no sufficient cause for an injunction has been shown. The court also failed to see any cause for an injunction in the Dakin suit.

Vicksburg, Shreveport & Pacific.—Work is to be begun on the extension of this road from Monroe, La., to Shreveport as soon as arrangements can be completed. It is the intention to begin at both ends of the line at the same time. The company also intends this season to begin the work of raising the whole of the old track from Delta (opposite Vicksburg) to Monroe, to avoid damage and delay from high water.

Wabash, St. Louis & Pacific. — This company will take full possession of the Chicago & Paducah road on April 5. The date for opening the Chicago branch is not yet fixed, but it is expected that trains will run through to Chicago about the middle of this month.

Western North Carolina.—The North Carolina Legislature has passed the bill authorizing the sale of this road to W. J. Best and associates. The terms of sale have been already published; they are substantially that the purchasers are to assume the debt of $850,000, now on the road; to have the use of the state convict labor at agreed rates; to complete the main line to Point Rock next year, and the Ducktown Branch in 1884.

Western New Hampshire.—This company is to be organized to build a railroad from the Ashuelot road at Hinsdale, N. H., north by west 10 miles to Brattleboro, Vt. Its object is to make a connection between the Connecticut River and the Vermont Valley roads, independent of the Central Vermont.

West Jersey.—In the suit of Thomas and others against this company, as successor to the Millville & Glassboro, to recover damages for the termination of a lease of that road, the United States Supreme Court has finally decided to affirm the judgment of the lower court. The Millville & Glassboro Company leased its road in 1863 to Thomas and his associates, and they worked it until 1868, when the contract was terminated by the company giving the notice required by the lease. Subsequently the road was consolidated with the West Jersey, and plaintiffs brought suit to recover for damages which, they claim, were done them by the abrogation of the lease. The Court supports the Circuit Court decree, and holds that the company had no authority to make the lease.

ANNUAL REPORTS.

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Cleveland, Columbus, Cincinnati & Indianapolis.

This company worked the following lines for the year 1879, there being no change from the preceding year:

	Miles.
Cleveland, O., to Columbus	138.0
Galion, O., to Indianapolis, Ind	203.0
Delaware, O., to Springfield	50.0
Cincinnati & Springfield, leased, Springfield to Cincinnati	80.5
Total	471.5

Whereof 391 miles, as above, are owned and 80.5 miles leased. There are on the line owned 20.03 miles of second track and 113.52 miles of sidings.

The equipment consists of 143 engines; 55 passenger, 7 sleeping, 2 parlor, 6 postal and 17 baggage and express cars; 2,239 box, 311 stock, 587 flat, 806 coal and 68 caboose cars; 1 directors', 1 pay, and 12 wrecking and service cars. There also on the road belonging to the leased Cincinnati & Springfield road 16 engines; 15 passenger, 2 postal and 6 baggage and express cars; 100 box, 98 stock, 79 coal and 11 caboose cars. During the year, 5 mogul freight engines, 500 box and 100 coal cars were bought, to be paid for in installments.

The general account is as follows:

Stock		$15,000,000.00
Less owned by company		8,200.00
Stock outstanding ($37,063 per mile)		$14,991,800.00
Bonds ($16,207 per mile)		6,337,000.00
Bills audited, unclaimed dividends		391,333.1
February dividend		374,770.00
Balance to surplus		795,908.20
Total		$22,899,811.37
Construction ($46,150 per mile)	$18,044,795.27	
Securities and real estate	3,337 412.16	
Materials on hand	229,909.18	
Cash and receivables	1,278,694.76	
		22,899,811.37

The securities and real estate include $300,000 stock and $676,750 bonds of the Indianapolis & St. Louis; $526,000 second-mortgage bonds of the Cincinnati & Springfield and $1,604,916.44 advances to that company; $114,235.77, cost of Dayton & Union stock and bonds; $67,856.25 invested in miscellaneous securities, and woodland, stone-quarry and other real estate valued at $47,653.70. There were $72,000 bonds paid and canceled during the year and $300,000 first consolidated bonds sold.

The earnings for the year were as follows:

	1879.	1878.	Inc. or Dec.		P. c.
Passengers	$739,939.47	$674,665.24	I.	$65,274.23	9.7
Freight	2,796,405.31	2,601,384 68	I.	195,020,63	7.5
Mail and express	138,711.33	149,967.62	D.	11,256.29	7.5
Rents, etc	83,911.85	102,696.25	D.	18,784.40	18.3
Total	$3,758,967.96	$3,528,713.79	I.	$230,254.17	6.5
Expenses	2,692,307.53	2,680,814.33	I.	11,493.20	0.4
Taxes	117,013.54	140,019.58	D.	23,006.04	16.4
Total	$2,809,321.07	$2,820,833.91	D.	11,512.84	0.4
Net earn	$949,646.89	$707,879.88	I.	$241,767.01	34 1
Gross earn. per mile	7,972.36	7,484.02	I.	488.34	6.5
Net earn. per mile	2,014.10	1,501.34	I.	512.76	34.1
Per cent. working exps	71.62	75.97	D.	4.35	5.7
Per cent. exps. and taxes	74.73	79.94	D.	5.21	6.5

The usual improvements of bridges, etc., were made, and the usual track renewals, including 5,009 tons steel rails and 9½ miles of stone ballast. A new yard was laid out at Linndale, near Cleveland.

The income account was as follows, condensed:

Net earnings, as above		$949,646.89
Interest on bonds	$425,180.00	
Dividend of 2½ per cent	374,770.00	
Paid Wabash pool, balance to Nov. 30	12,045.57	
Bad accounts charged off	35,818.31	
		847,813,88
Surplus for the year		$101,833.01
Add premium on bonds sold		19,750.00
Surplus, Jan. 1, 1879		674,325.19
Surplus, Jan. 1, 1880		$795,908.20

The surplus for the year after paying interest on bonds was $524,466.89, or about 3½ per cent. on the stock.

The traffic for the year was as follows:

Train mileage:	1879.	1878.	Inc. or Dec.		P. c.
Passenger	979,202	1,006,754	D.	27,552	2.4
Freight	3,586,105	3,499,473	I.	86,632	2.5
Service	74,870	92,334	D.	17,464	19.0
Total	4,640,177	4,593,561	I.	41,616	0.9
Passengers carried	744,181	695,955	I.	44,226	6.4
Passenger mileage	34,071,632	29,470,300	I.	4,601,332	15.6
Tons freight carried	2,299,711	1,949,480	I.	350,231	18.0
Tonnage mileage	401,107,970	345,845,373	I.	55,262,597	16.0
Av. train-load:					
Passengers, No	34.80	29.27	I.	5.53	18.9
Freight, tons	111.85	98.83	I.	13.02	13.2

The cost of locomotive service was 14.20 cents per mile, a decrease of 0.69 cent from the previous year.

President Devereux's report says: "A comparison between the earnings and expenses per ton-mile of freight this year with last, shows:

	1879. Cents.	1878. Cents.	Inc. or Dec. Cents.
Freight earnings per ton mile	0.697	0.752	D. 0.055
" expenses " "	0.575	0.655	D. 0.080
Net earnings " "	0.122	0.097	I. 0.025

"And the passenger rates and expenses per mile, as compared with 1878, are as follows:

	1879. Cents.	1878. Cents.	Inc. or Dec. Cents.
Rate per mile	2.579	2.798	D. 0.219
Expense per mile	1.135	1.410	D. 0.275
Net earnings	1.444	1.388	I. 0.056

"The extraordinary gross freight rate of the year is to be noted, dropping below the rate of any preceding year, and averaging, as it is seen *less* than *seven mills* per ton mile.

"When it is stated that through or competitive tonnage forms 79.71 per cent. of the entire freight traffic of the railway, it will be understood how vital to net revenue is the maintenance of reasonable remunerative rates.

"The gross rate per ton-mile on competitive freight traffic has been, during the year, by months:

	Cents.		Cents.
January	0.656	July	0.430
February	0.617	August	0.537
March	0.532	September	0.666
April	0.463	October	0.659
May	0.457	November	0.731
June	0.377	December	0.752

"And the addition of a single *mill* upon the year's freight traffic equals a net earning exceeding $400,000.

"Allusion was made in the previous annual report to pooling contracts and to certain conservative agreements between the trunk roads, which also included most of the principal Western rail lines. These agreements it was believed, would largely lessen, if not entirely remove, the evil of unlicensed competition for traffic which had destroyed rates and revenue.

"A considerable portion of the year had passed before much efficiency was given these agreements, and throughout the spring and early summer, rates in competition with the lake and canal were simply below the cost of service.

"United and effective action, for the first time under the trunk lines agreements, relieved the situation during August, and thenceforward, for the remainder of the year, the results of operation improved steadily.

"It is to be hoped these arrangements of the trunk lines and connections for the maintenance of tariff, and for the amicable settlement of transportation quarrels, whenever or however they may originate, are now permanently as well as thoroughly in operation. And, as remarked in a previous report, these transportation contracts and regulations serve not the rail interests alone, but also benefit the shipper, the community and the state.

"The advances to the leased lines and payments on account of construction work during the year have been:

To the Cincinnati & Springfield Railway	$116,786.38
Construction, new equipment and land	46,267.55
Total	$163,053.93

"The financial condition of the Cincinnati & Springfield Railway has improved, and that road has been further strengthened by the transfer to its tracks, between Dayton and Cincinnati, of the traffic of the Atlantic & Great Western Railroad, under an agreement which took effect on May 1. There is every prospect that henceforward the Cincinnati & Springfield will be able to meet its obligations and operating cost.

"The legal situation in respect of the Indianapolis & St. Louis Railroad, the other leased line of this company, remains unchanged since the last report. The litigation in connection with that road, which had been inaugurated by the St. Louis, Alton & Terre Haute Company, is still pending.

"The pool with the Cincinnati, Hamilton & Dayton Railroad Company has continued in successful operation throughout the year.

"A pool of gross earnings was made between this company, the Indianapolis & St. Louis, and the Wabash Railway Company, which took effect June 1. The current working of this arrangement has been very satisfactory and to the best interests of the several roads.

"It is gratifying to be able to state that the floating indebtedness of the company heretofore existing, caused by advances to leased lines under contracts of long standing, has been liquidated during the year. To accomplish this object, the bonded indebtedness of the company has been increased $228,000, and now stands at $6,337,000.

"The condition of the railway and its equipment, in every respect, was never better; and, with the present contracts for rails filled, the main track between Cleveland and Cincinnati, and between Galion and Indianapolis, will be wholly laid with steel rails."

Western North Carolina.

This road, owned by the state of North Carolina, is now completed from Salisbury, N. C., to Gudger's Ford, 138 miles. The main line is to extend seven miles further to Asheville, and thence 45 miles to Paint Rock on the Tennessee line, and a branch is to be built to Ducktown, in the southwest corner of the state, 135½ miles from Asheville.

The equipment consists of 6 engines, 6 passenger, 2 baggage and 27 freight cars. More cars and engines are much needed.

The earnings for the year 1879 on about 130 miles worked were:

Gross earnings ($634 per mile)	$82,422.37
Expenses (61.50 per cent.)	50,264.87
Net earnings ($247 per mile)	$32,157.50

The net earnings were all used in construction, the state paying the interest on the $850,000 bonds of the road. There is a floating debt of about $30,000. The officers report that some 80 miles of the road are laid with iron that has been in use over 20 years, and much of it needs immediate renewal. The bridges are generally good, but many ties are old and rotten, and the track needs ballasting and ditching badly. The shops are good, but new tools are needed. To finish the road to Asheville, put it in good running order, and supply the equipment needed for present use will take about $225,000.

The estimated cost of the Paint Rock Extension of 45 miles is $650,000, and of the Ducktown Branch of 135½ miles, about $5,000,000, as some expensive work is required on that line.

As noted elsewhere, the Legislature has passed a bill authorizing the sale of the road to a syndicate represented by W. J. Best, of New York.